Road Services Division
2015 – 2016 Line of Business Plan

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1. Introduction

Critical safety work is the top priority for the 2015 – 2016 biennium. With insufficient funds for preservation or replacement of infrastructure, available revenues will be focused on reacting to the higher risks associated with the deteriorating road system. The six-year capital improvement program is significantly diminished from past years and is focused on unexpected rather than planned repairs. At the current funding level, the division anticipates the need to focus resources on unplanned failures and system deterioration.

In response to significant changes in revenues, the Road Services Division has reorganized and reduced work groups and locations, changed operations and procedures, and implemented additional efficiencies in both the approach to the work we do and the equipment and materials used. As part of the 2015 - 2016 budget process all resource allocations were reviewed, and the division received assistance from agencies throughout the county to identify savings, efficiencies and new ways of doing business. Reductions to work groups that provide maintenance and administrative support to the road system happened in previous budget cycles. Because major capital projects have come to conclusion and there is insufficient revenue for new projects, work groups focused on capital improvements are significantly reduced in this budget. The division is also limiting commitments to provide engineering, project management, and general maintenance work for cities and other agencies in order to achieve a more stable and sustainable staffing level, and to fully focus the agency on county roads and bridges.

About this plan

Road Services has produced business plans for over a decade, but this is the first plan to incorporate the Line of Business approach from the county's performance management model. This plan uses a product-oriented framework to look at the division's business, both over the next biennium and 10 years into the future. It includes a catalog of the products, or infrastructure assets, and illustrates how the proposed 2015-2016 budget investments align with those products and our customer's experience of the county road system.

This approach has allowed Road Services to better link the budget to its strategic priorities and asset management framework. It also provides a powerful tool to communicate to elected officials and the public about what current resources are "purchasing" and why specific resource allocation choices were made.

*A **Line of Business** is defined as the processes that produce a highly-related family of products that, when combined, fulfill a business or customer need. A line of business may cross existing organizational boundaries to serve a common purpose.*

Lines of Business are the high-level units for which King County leaders "check" operational performance and problem-solve. Strategic plans are implemented operationally through Lines of Business.

About the division

Road Services is one of five divisions in the King County Department of Transportation. It is responsible for all county-owned roads, bridges, and related infrastructure in the unincorporated areas of the county, and must meet the road-related transportation needs of a very large and diverse service area. The county's many bridges are an integral part of the road system, as are other components such as sidewalks and pathways, bike lanes, guardrails, drainage and water quality facilities, traffic control equipment, and traffic cameras.

Road Services products/assets

Over the past two years, the division has been working to better understand its customers, the products it delivers to them, and the business processes that create those products. Roads worked closely with senior county leadership and the Office of Performance, Strategy and Budget to articulate a product oriented approach to process management. Consistent with the division's asset management framework, the product families included correspond to the categories of infrastructure assets the division is responsible for managing. These products, and the attributes customers expect to receive from them, are shown in Fig. 1.

This new approach provides a systematic way to analyze and articulate what we do, why we do it, and how we do it. It provides a framework for evaluating costs and impacts on value provided to customers. That understanding has allowed the division to undertake the continuous improvement processes needed to identify and eliminate activities that are adding little or no value.

If the road miles of unincorporated King County were laid end-to-end they would stretch from Mexico to the Canadian border.

In August 2012, Road Services shared this new approach with Councilmembers and used some of its components to explain the 2013 – 2014 budget. This more developed and robust version is central to communicating about the 2015 – 2016 Budget.

Fig. 1

PRODUCTS & DESIRED ATTRIBUTES

Roadway

- Meets safety and environmental standards
- Free of hazards
- Accessible for emergency vehicles
- Usable during snow events
- Smooth ride
- No load limits or undue speed restrictions
- All lanes open
- Reliable travel time
- Free of litter/debris

Bridges/ structures

- Meets safety and environmental standards
- Free of hazards
- Open
- No load/height restrictions
- Nonmotorized access
- Minimal crossing delays
- Free of litter, debris, graffiti, bird guano

Drainage

- Meets safety and environmental standards
- Water on roadway causes minimal impact to travelers
- No water damage to infrastructure or private property
- Good water quality
- Ponds, ditches and enclosed drainage system free of litter/debris
- No mosquitos in road-related ponds or ditches

Traffic control

- Meets safety standards
- Restrictions clearly marked
- Damaged signs replaced
- Traffic signs, stripes and markings visible night and day
- Intersections operating efficiently (for safety and optimal traffic flow)
- Traffic control systems operating correctly
- Information is accurate, clear, appropriate
- Free of graffiti

Roadside

- Meets safety and environmental standards
- Free of hazards/obstructions
- Good sight distance
- Guardrail where appropriate
- Vegetation does not interfere with road use
- Clear, unobstructed area for nonmotorized use and for vehicles that leave roadway
- Mitigation of slide and washout risk

The unincorporated-area road system owned and managed by Road Services includes the following asset inventory (numbers are approximate):[1]

- 1,441 miles of paved roads
- 51 miles of unpaved roads
- 183 bridges, including several jointly owned with cities
- Over 44,000 traffic control signs
- 80 traffic signals
- 114 miles of protective guardrail
- 55 traffic cameras
- 5.7 million feet of drainage ditch
- 2.9 million feet of drainage pipe

The average age of county arterials is approximately 91 years and local roads 47 years.

The County road network enables travel between cities and other counties. County roads are necessary links for the movement of people, utilities and goods throughout the most urban and dense county in the state. These roads—built generations ago—are failing, and there is insufficient funding to maintain and replace them. Our connectedness hinges not just on high-profile arterials, but on many miles of ordinary and unremarkable roads, culverts and bridges that travelers mostly take for granted.

Roads in the county's rural area are some of the oldest in the system, and are the most vulnerable to falling trees and debris, floods, and snow storms, as roads run alongside rivers and streams, through heavily wooded areas and at higher elevations.

Our customers

More than one million trips are taken on King County's unincorporated road network each day. In addition to unincorporated residents, more than a quarter of a million other people also use the same roads and bridges to commute to school and work, recreational activities, to move goods from farm to market, and as routes for freight and businesses.

Public service providers, such as police, fire, emergency medical responders, and Metro Transit, are also key customers of the county's unincorporated-area road system. In addition, the road right-of-way serves as a pathway for delivery of water, sewer, stormwater control, energy, and communication utilities. All of these users expect effective and reliable access to and through the county right-of-way.

Another group of Road Services customers are the cities and other county agencies that purchase

In King County, 13 percent of the total population pays for the unincorporated area road system that supports over a million trips per day. This is because we are the only county to have so completely implemented the state's Growth Management Act, which calls for small, dense, urban areas of high-value properties to be annexed into cities. The old system for funding county roads didn't contemplate growth management, and it doesn't leave sufficient revenues to keep the system functioning even at current levels.

[1] Based on 2013 inventory data

road-related services such as maintenance, construction and engineering support. While at one time the division performed a large amount of work for these customers, the division is reducing/eliminating commitments to others to perform general maintenance work in order to focus on maintenance of the county's unincorporated road system. The division will continue to provide services for more technically complex work like bridge inspection, materials testing, and traffic signals. This work is appropriate for a regional public provider because most other small agencies cannot support specialized staff for occasional projects, and these are services that are typically less available in the private sector. Roads will avoid work for other agencies that presents a seasonal conflict with work necessary on county roads, like sweeping for leaves, and will continue as a regional provider work that is less time sensitive and supports economies of scale, like expert bridge inspectors.

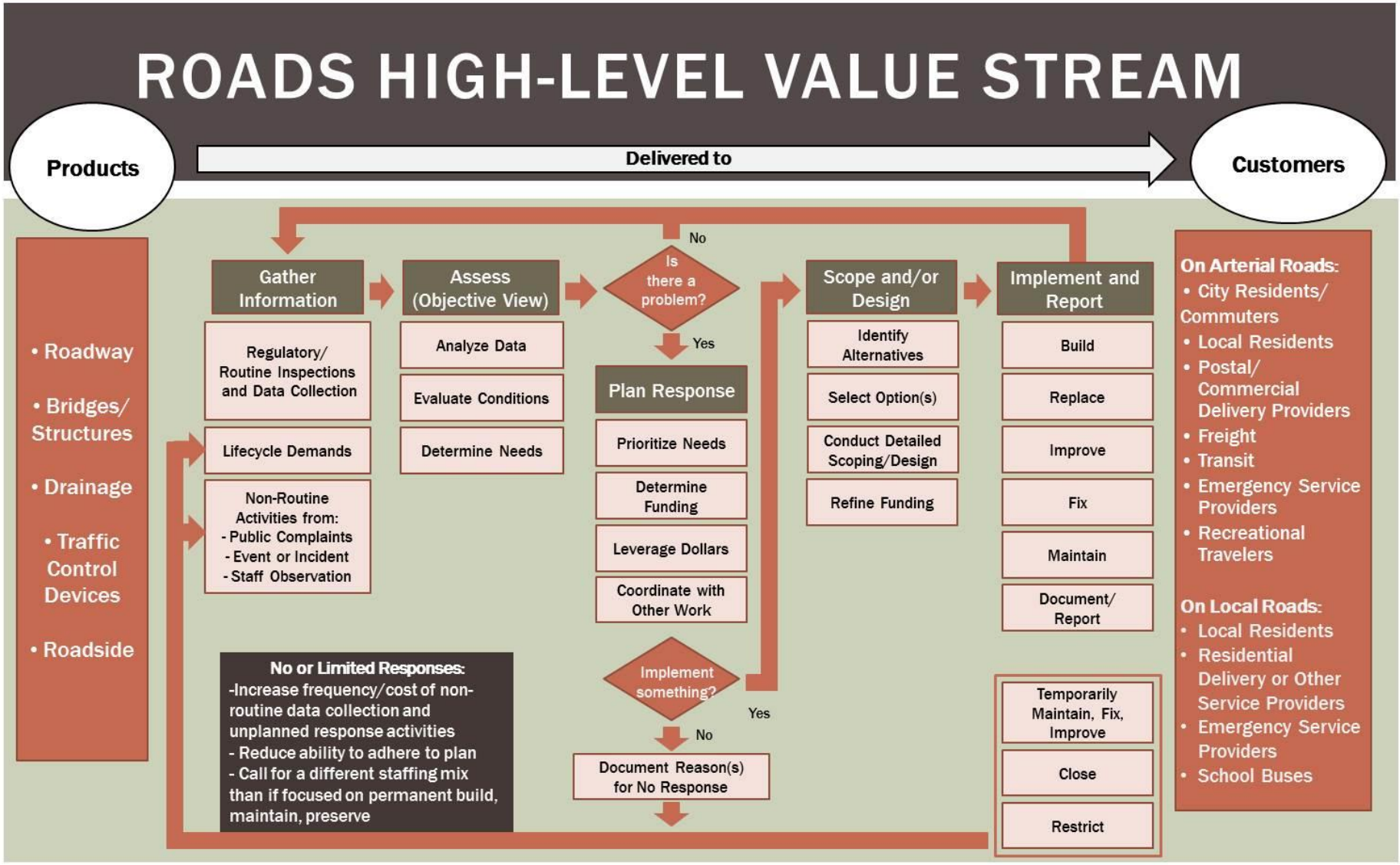
Road Services Division customers include:

- *Commuters*
- *Local residents*
- *Freight*
- *Transit*
- *School buses*
- *Emergency service providers*
- *Recreational travelers*
- *Utilities and other public service providers*
- *Residential delivery services*
- *Jurisdictions/agencies that purchase road-related services from the division*

Value stream

A value stream map is a visual representation of the major processes and activities involved in bringing a product or service to the customer from demand to delivery. Road Services has analyzed its primary business processes as depicted in Fig. 2.

Fig. 2


ROADS HIGH-LEVEL VALUE STREAM
Products
Delivered to
Customers
• Roadway
• Bridges/ Structures
• Drainage
• Traffic Control Devices
• Roadside
Gather Information
Regulatory/ Routine Inspections and Data Collection
Lifecycle Demands
Non-Routine Activities from:
- Public Complaints
- Event or Incident
- Staff Observation
Assess (Objective View)
Analyze Data
Evaluate Conditions
Determine Needs
Is there a problem?
No
Yes
Plan Response
Prioritize Needs
Determine Funding
Leverage Dollars
Coordinate with Other Work
Implement something?
Yes
No
Document Reason(s) for No Response
No or Limited Responses:
-Increase frequency/cost of non-routine data collection and unplanned response activities
- Reduce ability to adhere to plan
- Call for a different staffing mix than if focused on permanent build, maintain, preserve
Scope and/or Design
Identify Alternatives
Select Option(s)
Conduct Detailed Scoping/Design
Refine Funding
Implement and Report
Build
Replace
Improve
Fix
Maintain
Document/ Report
Temporarily Maintain, Fix, Improve
Close
Restrict
On Arterial Roads:
• City Residents/ Commuters
• Local Residents
• Postal/ Commercial Delivery Providers
• Freight
• Transit
• Emergency Service Providers
• Recreational Travelers
On Local Roads:
• Local Residents
• Residential Delivery or Other Service Providers
• Emergency Service Providers
• School Buses

Strategic context

In July 2014 the council approved an update to the Strategic Plan for Road Services (SPRS). That plan, which includes a funding and needs analysis, policy framework, goals and strategies, alternate service delivery scenarios, and facilities planning guidance, serves as the strategic context for this Line of Business plan.

Road Services' mission and vision are as follows:

Mission

Manage the unincorporated King County road system through focused investment of available resources to facilitate the movement of people, goods and services, and respond to emergencies.

Vision

A resilient, sustainably funded, unincorporated urban and rural road system that supports our communities and the economy by connecting people to employment, education, commerce and recreation, and is well-integrated with the regional transportation network. This is achieved through a lowest-lifecycle-cost approach to effective infrastructure maintenance, preservation, and improvement.

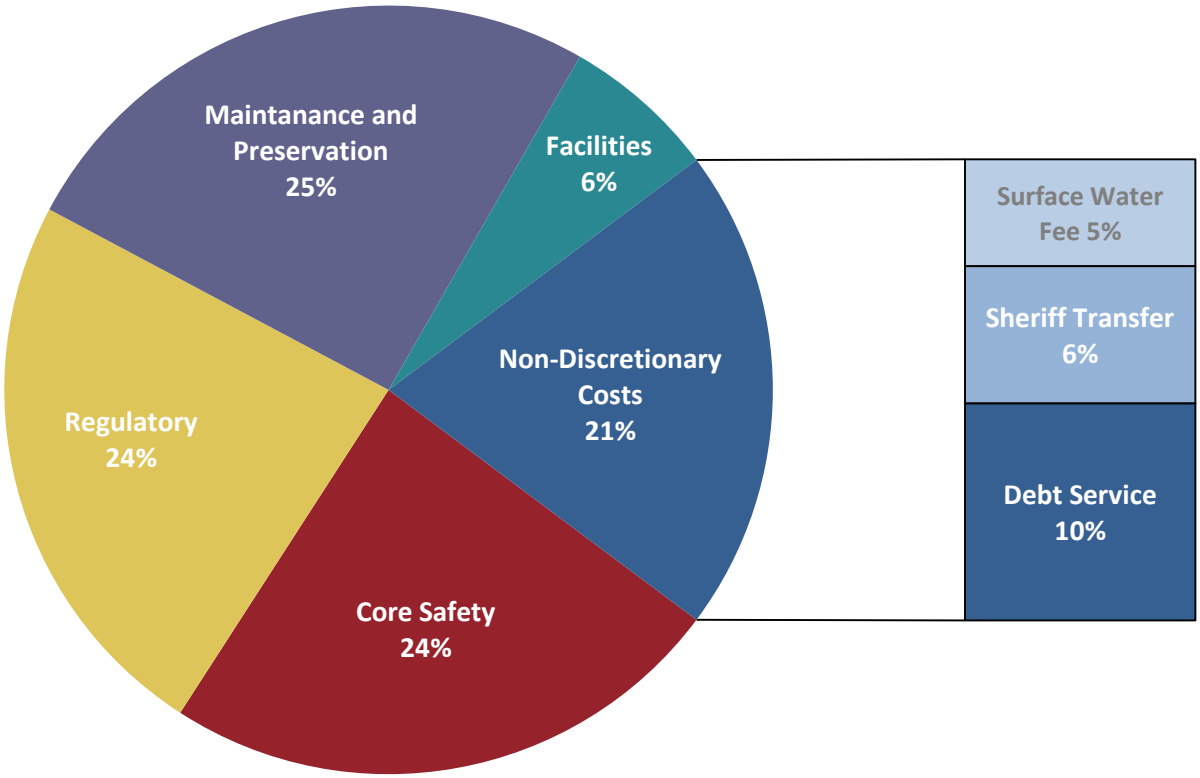
The strategic plan responds to the dilemma of significantly constrained resources by setting clear priorities to guide the division as it manages the road system. The plan outlines two types of goals as shown in Fig. 3. "What we deliver" goals articulate, in priority order, what the division intends to accomplish, and "how we deliver" goals articulate how the division intends to conduct its work. In general, "what" goals relate to the products and services provided to the public, and "how" goals speak to the internal aspects of services (such as cost-efficiency).

Fig. 3

Roads has used these goals and priorities to build its 2015 - 2016 budget and six-year capital improvement program, which results in funding safety and regulatory work first and then a limited amount of preservation and maintenance activities due to revenue constraints. The division is currently unable to fund mobility and capacity work.

Budget alignment with strategic context

2015 - 2016 Budget by Strategic Plan Goals and Other Costs
Total = $197 million[2]



The strategic plan also prioritizes the road hierarchy as follows in order to keep the most vital components of the road system operational for customers: 1) lifeline routes; 2) arterial roads; 3) sole-access local roads; and 4) other local access roads. Based on this guidance, in 2011 Road Services developed a tiered service level framework. Each roadway was assigned to one of five tiers using criteria such as traffic volume, projected lengths of detours, and whether the road provides sole access, is a lifeline route, or is important for transit or freight. While safety and regulatory work are a priority for all tiers, maintenance and preservation work efforts are guided by tier designation. Tier 1 roads generally will receive the most service, and Tier 5 roads the least.

[2] Total does not include reimbursable services budget or contingent budget authority.

2. Current situation—rough road ahead

Budget environment past and future – "Saying no to say yes"

This line of business plan is being prepared at a crucial crossroads for the future of Road Services. In 2015 -2016 the division will not be able to respond to every request or concern that is raised. Conditions on the road system will worsen and resources must be focused on immediate critical safety needs. An example may include overgrown vegetation that is unsightly, but not yet a safety issue. In effect, Roads will need to say no to many less critical requests in order to say yes to higher priority, immediate operational safety activities.

The Klahanie annexation anticipated in 2016 will remove $4.8 million in revenue or six percent of total property tax revenue. However, only 27 road miles, or 1.8 percent of the total mileage will leave the county road system.

Events of the last decade have had profound impacts on the county road system, and the coming decade will solidify the recalibration of the division's business model in response to those impacts. Over the past twenty years annexations were heavily promoted consistent with the Growth Management Act and county policy. Several large geographic areas – with their associated tax base – left the county road system. The amount of funding lost versus the number of road miles transferred to other jurisdictions in annexations was often not proportional.

In 2004 voter initiatives eliminated the local vehicle license fee and limited the amount of road levy funds that can be collected. These changes resulted in a significant decline in revenue, the return of grant funds due to lack of matching funds, and a lack of funding for capacity projects in the capital program. The financial impacts resulting from these initiatives continued to grow and compound in subsequent years.

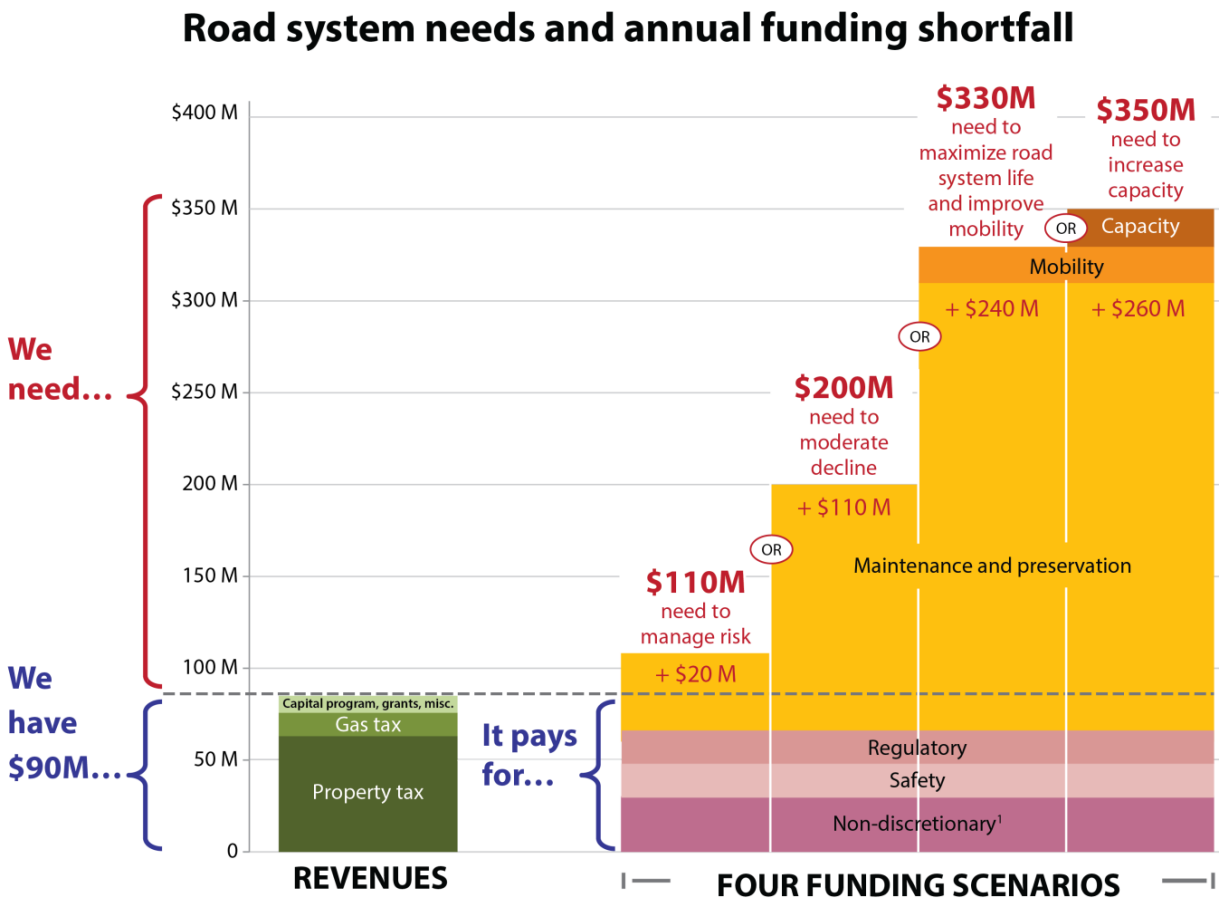
In 2013, the median single family home owner in unincorporated King County paid approximately $80 less in Road Levy property taxes than in 2011.

Then in 2008 the housing and banking crisis sparked the Great Recession. The total unincorporated area assessed property value has fallen by more than 40 percent since 2009. While the tax base has shown some signs of recovering, it will be years before the tax base returns to pre-recession values in real terms. Aggravating these impacts, gas tax revenues for counties have (and are expected to continue to) trend downward as annual vehicle miles traveled decline and vehicles become more fuel-efficient. The end result is a tax base that does not support the cost of maintaining the existing and future road system needs.

As depicted in Fig. 4, the 2014 strategic plan update estimates that it would cost $350 million annually—for a period of over ten years—to fully address the current backlog of road system needs, embark on an asset management program that produces the lowest life cycle costs and brings the system to a state of good repair, address the division's future maintenance facility needs, and systematically accomplish the road capacity, mobility and non-motorized needs identified in the Transportation Needs Report. Based upon information and forecasts provided by the Office of Economic and Financial Analysis and Washington State Department of Transportation, the division estimates that the average revenue for the next ten years is about $90 million annually – less than half of the $200 million needed just to moderate

the decline of the system and minimize risk. Under these financial constraints, the 2015-16 biennial budget focuses limited resources on delivering the most critical services. However, the reduced ability to care for infrastructure assets will lead to further deterioration of county roadways. Eventually the lack of preservation and maintenance will force speed and weight limitations, bridge and road closures, detours, and longer travel times.

Fig. 4



Projected as of February 7, 2014. These projections represents a snapshot in time and do not account for unanticipated grant or tax revenues or changes to annexation activity.

(1) Non-discretionary includes King County internal service charges, debt service, and other costs not under Road Services Division control.

Recent and planned efficiencies

The division has made a concerted and active evaluation of all aspects of its business, work locations, tools, equipment and materials. The services we buy and sell were all adjusted for the current fiscal and geographic reality the division faces. Some of the efficiencies include:

- Consolidated office space at the King Street Center from space on three floors to ½ of a single floor.
- Reduced fleet inventory by more than 20 percent.

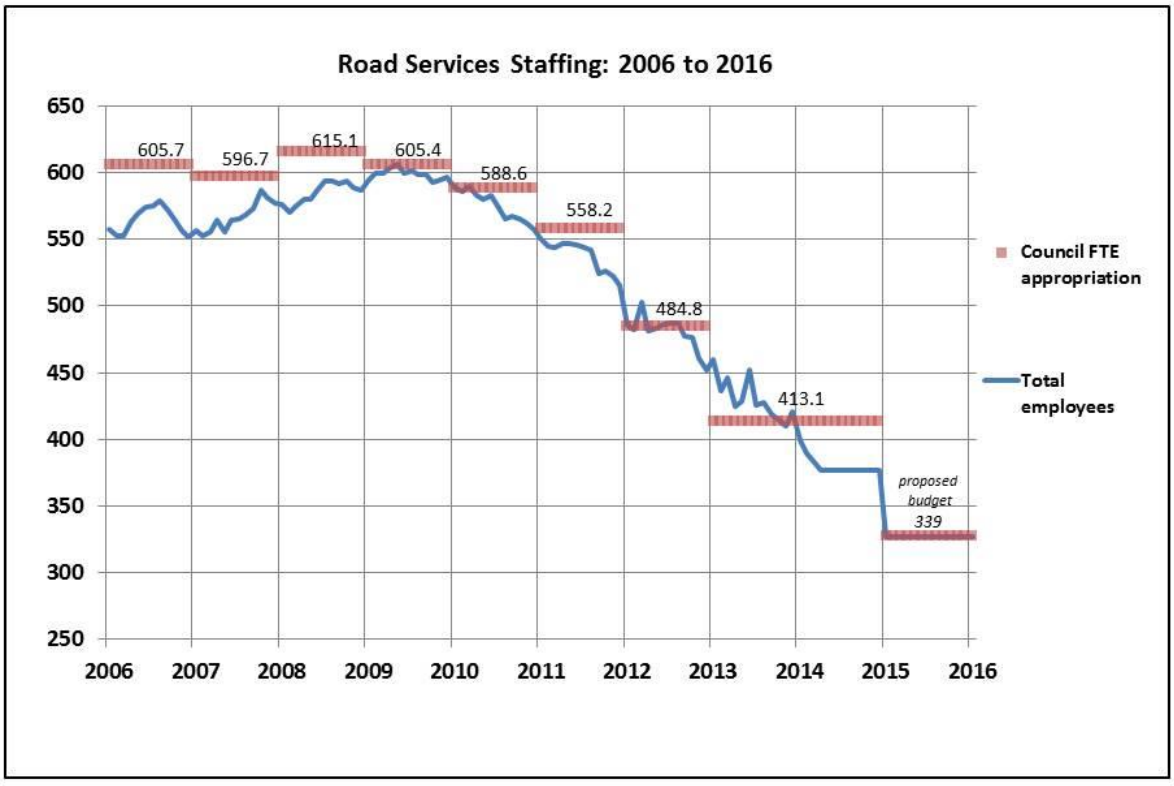
- Closed three maintenance facilities and consolidated staff, equipment and supplies in the remaining six. Re-organized maintenance divisions to improve travel times and crew compliments. Consolidation also reduces energy consumption associated with field operation.
- Reduced radios, computers, phones and other operating supplies.
- Reduced costs associated with mandatory traffic count program by incorporating counts into existing signal technology.
- Maximized data collection capabilities by centralizing staffing resources and eliminating the duplication of data collection and management for roadway, drainage, and roadside assets.
- Formed “One King County” partnership with the Solid Waste Division to take organic street waste material to Cedar Hill Landfill to be used as daily cover in lieu of costly processing.
- Consolidated Roads Maintenance Programmatic Clearing and Grading Permits from three permits with the Department of Permitting and Environmental Review to one programmatic permit for all maintenance work.
- Historically, the county has been able to keep about 30% of the road miles plowed during a county-wide storm event. In 2014 we had the staffing capacity to address only 10% of the road miles. In working with labor partners, snow and ice response staff will be supplemented with staff from other county agencies and temporary staff, and regular staffing levels will be increased by transferring some positions from other functions. During a large storm event, this will allow the county to expand the miles plowed from about 10% of the system to about 14% of the total county road miles for the winter of 2015.
- Partner with the Water and Land Resource Division to assess the condition of regional drainage systems in the right-of-way. The assessment will inform future policy discussions regarding the responsibility and funding structure for operation and replacement of those systems.
- Complete implementation of the maintenance and asset management software system, which will improve the efficiency of responding to service requests and completing work orders.
- Complete implementation of automatic vehicle location program (AVL) to allow for more efficient crew dispatch, collection of accomplishment rates in the field, and better management of the fleet.
- Convert county-owned street lighting to LED technology to achieve long-term reductions in energy use.

Staffing reduced by nearly half

Significant layoffs and organizational changes, as well as associated reductions in service, have resulted from the dramatic drop in road revenues. The Road Services Division will have eliminated about 45 percent of its workforce through nine layoff processes. In 2009, Roads had about 615 FTEs. Following the cuts planned at the end of 2014, Roads will have a base level of staffing of about 339 FTEs (see Fig. 5). The decline in revenues and the resulting cuts are unprecedented, and have resulted in an organization in a constant state of flux.

Roads has experienced nine rounds of layoffs since 2009. Labor contract seniority provisions mean that reductions in force are accompanied by “bumping” as more senior employees displace other employees with less seniority, exacerbating the amount of organizational changed and disruption to work activities. As part of the 2015/16 budget process, the division took the final steps to stabilize staffing over at least the next four years. Creating stability in the workforce is essential to support productivity and effectiveness. Training is another important component of supporting a skilled and effective staff in a smaller agency where significant job compression has occurred. Employee roles and job duties have change and evolved rapidly since 2009. Work that was once done by several people is now the responsibility of far fewer individuals and people must be adept at multiple roles and areas of expertise. In addition to these changes, over the past few years many experienced staff members have retired or voluntarily left county employment for other opportunities, decreasing the organization’s knowledge base and skill sets. The division’s 2015- 2016 budget includes a modest amount of resources for training to support both technical skill requirements and other staff development needs.

Fig. 5



3. 2015-2016—Reacting to risk and focusing on safety

Declining asset condition and increasing risk

Despite the best efforts of the division to maintain the road system, the structural funding challenges will continue to negatively impact the condition of the county's roads and bridges. Referring back to Fig. 4, we see that $110 million is required annually to "Manage risk in a declining system." Since there will only be an average of $90 million available annually, the county will be in the position of reacting to, rather than managing, risks to the road system. As outlined in the division's strategic plan, without significant increases in funding, 35 bridges could be closed in the next 25 years and over 70 miles of roadway are at risk of speed or load restriction or closure. In addition to the ongoing deterioration, which will occur faster in the coming years, the system will also be subject to more and greater failure events.

Failure events may be weather related (for example landslides, washouts, or flooding), or a result of inability to perform sufficient proactive maintenance, repairs, or replacements (for example, sink holes or pipe collapse associated with aged and deteriorated drainage assets). In the first half of 2014, the system experienced over $7 million of landslides and other failures, a three-fold increase from the previous year. As of the date this plan is being written, two bridges are closed, one will be permanently removed due to lack of resources for repair/ replacement, and three roadways remain closed due to lack of funding for repair. Some examples of recent failures are shown in Fig. 6.

While it is expected that there will be an increase in road system deterioration and more frequent road failures, it is difficult to predict which specific assets will fail or when. This unpredictability poses a unique challenge for the division and means changing to a more reactive service model. To address this issue, additional funds have been allocated to respond to unanticipated failure events. In additional to flexible resources that can be used to respond to emergencies, this model requires an organization shift and a critical focus on key skill sets.

The 2015 – 2016 staffing and organizational structure will consist of the Director's Office and three sections: Strategic Business Operations, Engineering Services, and Traffic and Road Maintenance. Overall the division is organized to retain key functions and skills sets that best meet the strategic plan goals of safety and regulatory compliance, and to ensure that the proper resources are available to respond to unplanned failures and emergencies.

Fig. 6

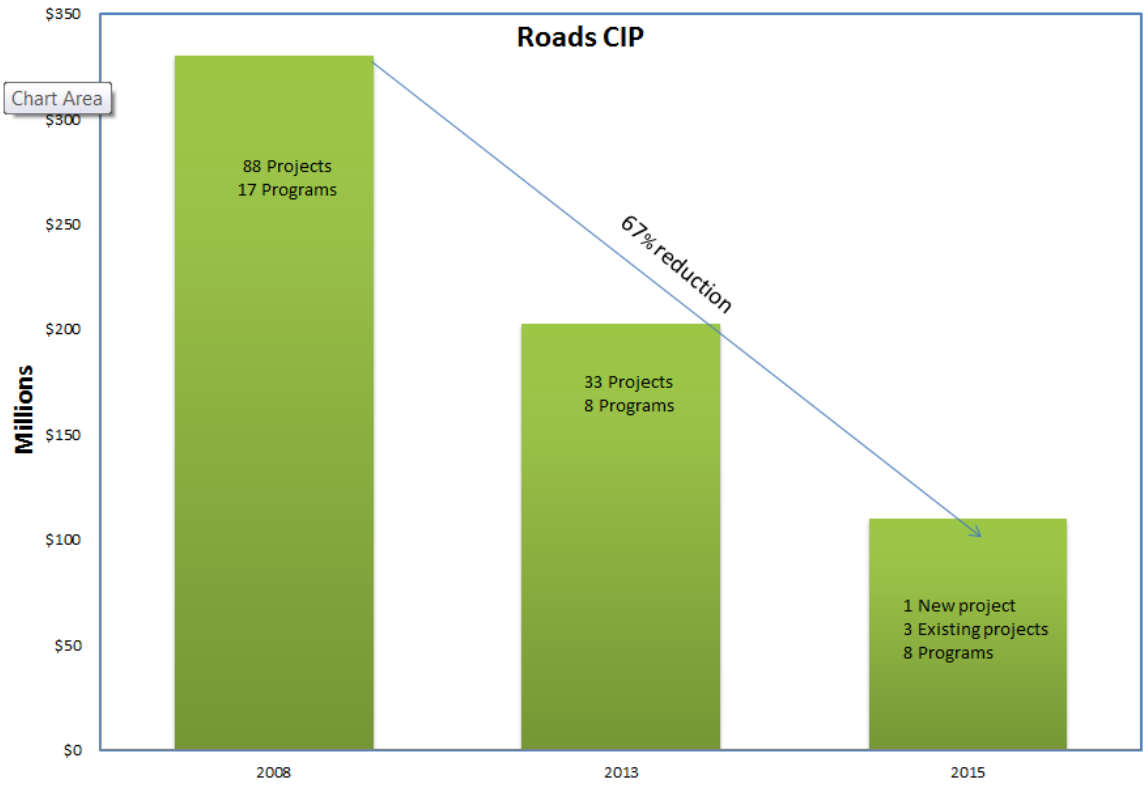
Capital programming

The 2015-2020 Capital Improvement Program (CIP) reflects an ongoing and evolving response to significant structural funding challenges that are affecting the county's ability to preserve and maintain the roadways in unincorporated areas. The proposed six year CIP totals $110 million. More information on the details of the CIP can be found in the CIP narrative document.

It is important to note that the planned capital improvement program for the next six years only contains one new discrete project, three carry-over projects, and some programmatic work (Fig. 7). The majority of the expenditures are identified for preservation and replacement programs such as pavement preservation and drainage facility rehabilitation, and the remainder is identified as reserves for unplanned failures and emergencies.

The new discrete project is the Roadway Light LED Conversion (funded by an energy conservation loan). The three carry-over projects are W Snoqualmie Valley Road NE, a reconstruction project funded by grants, SW Roxbury St, a sidewalk project funded by grants, and South Park Bridge closeout.

Fig. 7



4. Contract Services

The funding challenges have significantly reduced the county's ability to act as a "consultants" and "contractors" for cities and other agencies. When there was a high demand for county road services, the changing work demands from outside agencies was less disruptive. County staff could be redeployed to a contingent, waitlisted non-Roads project or busy capital and maintenance work on county roads. In the hope that state or other funding initiatives would come through, work for other agencies continued through the last biennium in an effort to retain expertise. However, the state legislature did not pass a new transportation funding bill, other revenue measures were not successful, and work at other agencies was unreliable due to the recession. The decline in revenue and work resulted in nine layoff processes between 2009 and 2014, several reorganizations of business units, and frequent changes and disruptions to work programs and staffing. In order to stabilize the delivery of services, programs were consolidated, reduced, delayed, or abrogated, and an evaluation of contract work was undertaken.

The current agency structure and work program best addresses priorities for county roads and brings stability to the organization. The division is reducing commitments to other agencies to perform general maintenance work, but will continue to provide services for more technically complex work like bridge inspection, materials testing, and traffic signals. This work is appropriate for a regional public provider because most other small agencies cannot support specialized staff for occasional projects, this work can be scheduled around county needs, and these are services that are typically less available in the private sector. Roads will avoid work for other agencies that presents a seasonal conflict with work necessary on county roads, like sweeping for leaves, and will continue as a regional provider work that is less time sensitive and allows for economies of scale, like expert bridge inspectors. The goal is to prioritize critical safety and work on county roads and avoid frequent disruptions to work programs and staff from layoffs.

Table 1 contains a menu of services the division will either continue to offer to customer jurisdictions and agencies, or are no longer available,[3] as well as a summary of proposed 2015 – 2015 budget allocations[4] for this work.

[3] Services no longer available are meant as a guideline. There may be extenuating circumstances under which the division could occasionally provide some of these services.
[4] Budget allocations are approximate and include King County labor, equipment, materials and overhead.

Table 1

Reimbursable Traffic Services ($5.7 million budgeted)	Yes, if planned and programmed	Case by case basis (discretionary)	No longer available
Sign maintenance: Replace faded, vandalized, or damaged signs; replace or fix rotten or leaning posts; relocate signs for visibility or pedestrian safety; inspect signs for reflectivity; cut or trim vegetation for visibility; remove and install signs as needed; and maintain sign logs/inventory.	X		
Sign fabrication: Design and fabricate signs of any size as needed.	X		
Pavement markings/striping: Refurbish and install crosswalks, stop bars and legends with thermoplastics; remove and replace raised pavement markers or rumble bars; and paint curbs and linear road stripes.	X		
Signal maintenance (includes flashers): Replace and clean light systems for signal and flasher displays and signs; install and repair vehicle detector loops; check and adjust signal timing; examine traffic signal operation to assure intended operation; inspect hardware for wear or deficiencies; test and repair electronic control devices and components; repair or replace signal and flasher displays including supports or wires to controller cabinets; modify and test controller cabinets and control devices; repair and test traffic counter; and perform preventative signal maintenance tasks.	X		
Street lights: Repair and replace street light heads, poles, light bulbs or wiring for existing street lights owned by customer.	X		
Utility locate: Locate underground traffic facilities owned by customer for utilities or other digging operations.		X	

Reimbursable Road Maintenance Services ($1.4 million budgeted)	Yes, if planned and programmed	Case by case basis (discretionary)	No longer available
Traveled roadway surface: Patch, pre-level, grade, and replace pavement; seal pavement cracks; control dust on roadway; clean hazardous material; sweep and flush roadway; and apply snow and ice control.			X
Shoulders: Restore and pave shoulders; repair curb and gutter; spray vegetation on shoulders; remove sod and debris; and extend pavement edge.		X	
Drainage: Repair, replace, and clean drainage pipe, curb, catch basins, culvert headers, trash racks, manhole, and drainage systems; maintain ditch by blade, hand, or bucket; mark pipe; control erosion; and remove silt.		X	
Structures: Maintain, repair, and replace rock, gabion, rip-rap walls, retaining walls, guardrails, fencing, and median barrier walls; install guidepost; and repair bridge.		X	
Traffic and pedestrian facilities: Maintain and repair concrete sidewalks/walkways; retrofit/construct ADA curb ramps; and maintain traffic control barricades.	X		
Roadside: Restore and maintain landscape; mow slope/shoulder; pick up litter; trim or remove brush by hand; remove dangerous trees; remove slide; maintain and trim ornamental trees; spray roadside and tansy ragwort; and repair washout.			X
Storm water pond maintenance: Mow, remove, and dispose of overgrown vegetation and accumulated sediment.		X	
24 Hour dispatch service: Take after hour calls and respond according to customer-established protocols.		X	

Reimbursable Engineering Services ($1.3 million budgeted)	Yes, if planned and programmed	Case by case basis (discretionary)	No longer available
Engineering services: Plan and design roadway and structure; perform preliminary engineering and environmental assessment; develop and write specifications; advertise for bids and hold pre-construction conferences; and manage customer projects.		X	
Bridge inspection, design, and structural analysis: Inspect customer owned bridges; provide engineering services related to inspections; generate work orders; assist customer in grant application; and design bridge repairs and bridges.	X		
Traffic engineering services: Conduct traffic investigation and studies; develop signal timing; perform warrant analysis; collect traffic and speed counts data; and provide intelligent transportation system services.		X	
Survey services: Locate right-of-way and perform construction, geodetic, large topographic, hydrographic and global-position satellite surveys.	X		
Soils and materials laboratory analyses: Conduct geotechnical investigations and provide quality control of construction materials and roadway pavement designs.	X		
Construction management services: Provide construction inspection, survey, materials sampling and testing, contractor progress billings, construction contract administration, and certification acceptance management oversight.		X	
Environmental support: Acquire permit; conduct biological assessments/evaluations for ESA compliance; provide monitoring during construction; design and construct fish passage; relocate fish; and restore stream and wetland.		X	
Overlay contract management: Include customers in the county's overlay contract.		X	

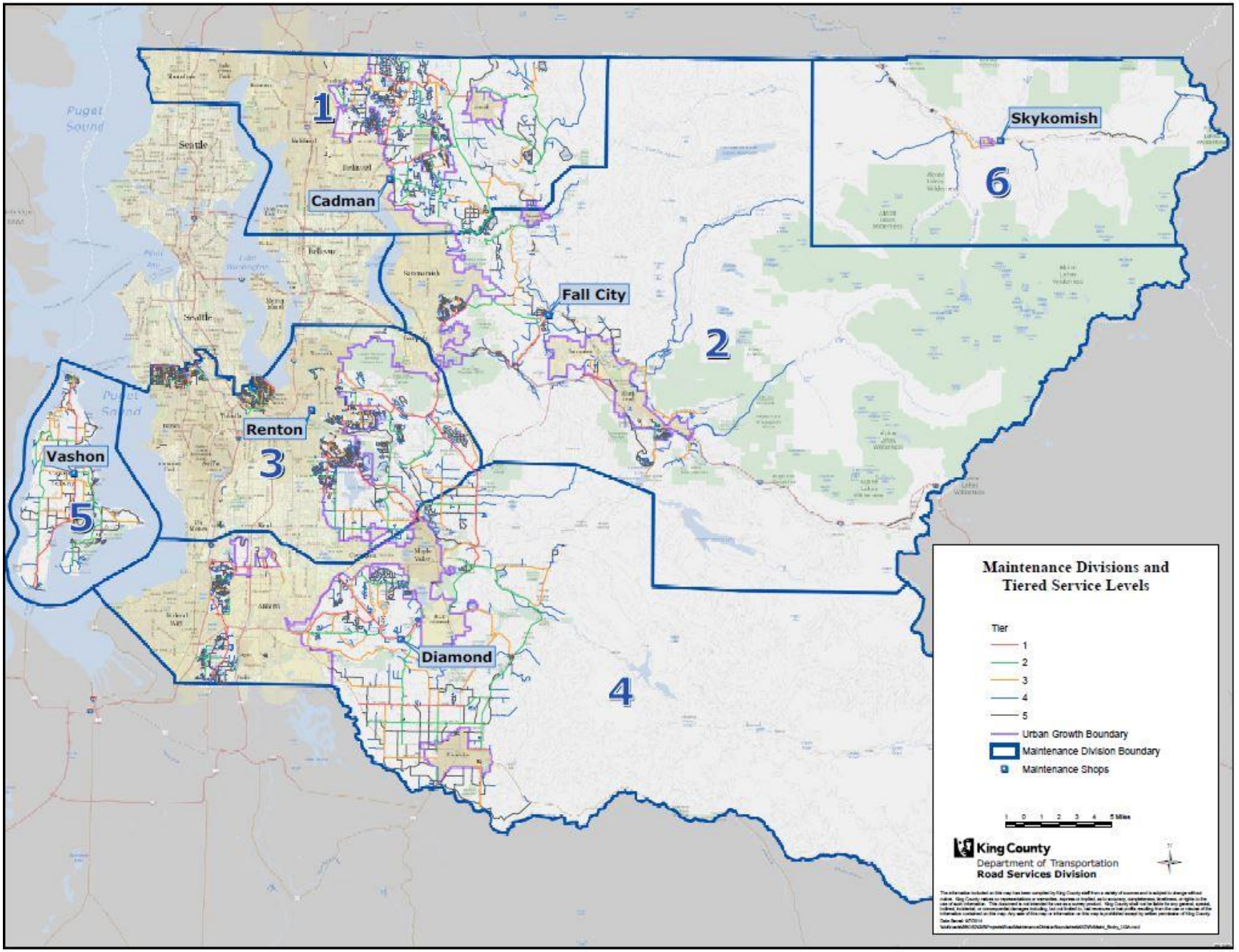
5. Facilities

The division included a Facilities Master Plan in its recently adopted Strategic Plan. The plan identified the need to deliver maintenance services more efficiently, identified needed repairs and guided the process of consolidation. Travel time is a significant factor in service delivery, and therefore, having facilities centrally located is an important efficiency and safety strategy. Some maintenance facilities have been surrounded by urban growth, and with the change in service areas, no longer allow for efficient and time sensitive service delivery.

In 2014, the division will consolidate facilities and redraw maintenance district boundaries (see Fig. 8). Dense urban areas in the western part of the county have annexed into cities, and as a result, the county's service area has moved farther to the east. Three facilities located in urban areas will be closed October 6 and staff will consolidate in the remaining six facilities. The division will operate with new district boundaries and staffing levels at that time.

As part of the Facilities Master Plan, a consultant identified critical repairs to key facilities that the division will keep long term. Given the funding challenges the division faces and knowing which facilities key staff will be operating in long term, the division has proposed a capital improvement project that will fund the most critical facility needs, from failing roofs and HVAC systems to protecting facilities from additional rodent infestations. It is necessary to have facilities with adequate heat to keep equipment from freezing, and weather-tight to keep equipment and supplies from suffering rain damage. These facilities need adequate systems to ensure there is power, staff are safe and can get warm as they are front line public safety service providers, often responding in 24 hour shifts to serious flooding, snow, ice and wind events.

Fig. 8


Puget Sound
Seattle
Cadman
Fall City
Skykomish
Renton
Vashon
Diamond
1
2
3
4
5
6
Maintenance Divisions and Tiered Service Levels
Tier
1
2
3
4
5
Urban Growth Boundary
Maintenance Division Boundary
Maintenance Shops
King County
Department of Transportation
Road Services Division

6. Equity and social justice considerations

Road Services' approach to integrating equity and social justice (ESJ) issues into agency business operations and budgeting includes the following components:

- **Prioritize emergency snow and ice response along Metro's highest priority transit snow routes**, since these may be the only source of transportation available to lower-income residents. Road Services has had to scale back snow and ice response for budget reasons, but these routes remain a priority. An agreement with the City of Seattle under which they plow certain city boundary roads and critical routes between cities also helps sustain service in ESJ communities.

- **Promote equal access to, and availability of, information and services** for all county residents by designing division communications and public engagement processes that are culturally relevant for diverse communities, including communities whose residents have limited English proficiency.

- **Utilize partnerships with other King County or external agencies, community groups, and non-profit organizations** to better understand community needs and obtain community input and involvement.

- **As funding or grant opportunities permit, provide road-related capital improvements** that serve the needs of communities whose residents are low-income, racially/ethnically diverse, or have limited English proficiency. Non-motorized improvements are emphasized in particular because they both help to support active, healthy lifestyles and also facilitate mobility for people with disabilities, those who cannot drive or unable to afford a car. Roads proposed 2015-2016 CIP includes a grant-funded project to construct a missing link of sidewalk on SW Roxbury Street in White Center, a community with significant low income, limited English speaking, and racially diverse populations.

- **Evaluate division projects and programs using census data and other relevant demographic and community data.** In 2014, Roads analyzed its service area to identify concentrations of ESJ populations. A series of maps, completed this year (2014) by the Executive's Equity and Social Justice committee, were used to locate EJS communities. The maps cross referenced low income, low English proficiency and high percentages of ethnic minority populations using data from the 2012 Census. The urban White Center and West Hill potential annexation areas are significant ESJ communities. However, the rural areas outside of the Urban Growth Boundary do not have significant concentrations of ESJ populations.

During 2015-2016, Roads will seek to further understand ESJ issues in its service area. The division will revisit Census track data as it becomes available to determine whether ESJ populations are moving into the rural area, recognizing that within 20 years, Washington will become a majority-minority state and King County is expected to experience significant demographical change.

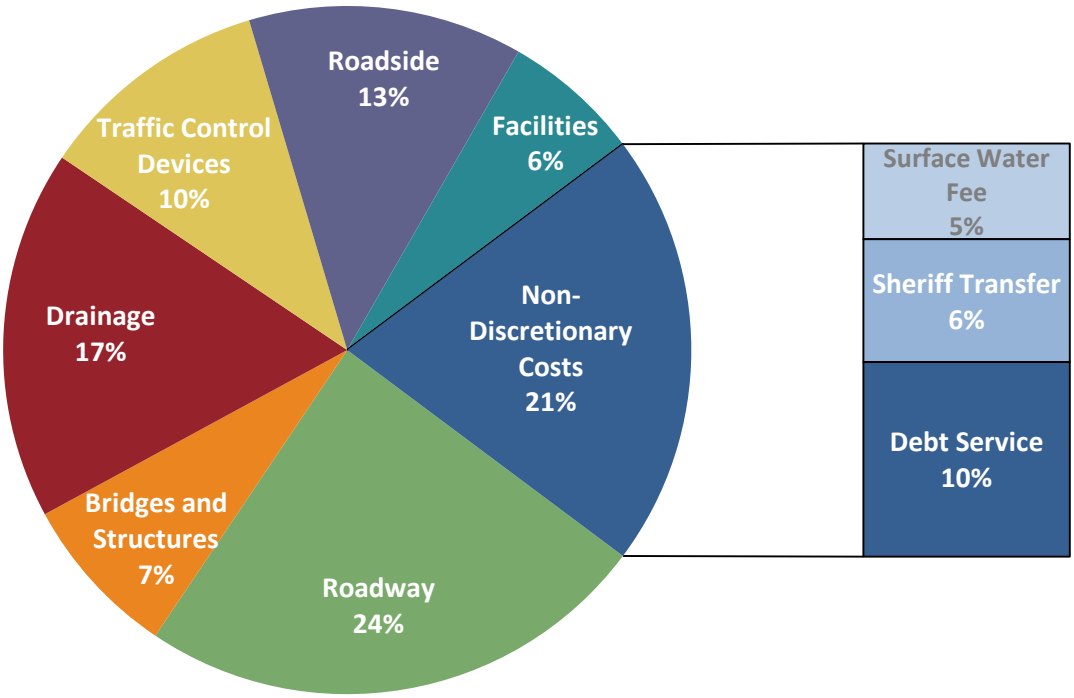
7. Product Catalog

This section outlines the products delivered by the Road Services Division (RSD) to its customers in 2015-2016. It aligns product families with proposed budget investments, explains what is being purchased and why, and highlights some anticipated results of those investments.

A new asset management system, initiated in 2012, delivers a more precise measurement of performance indicators, asset condition and productivity units. The asset management system will be fully implemented in 2014 and will begin producing data in 2015/16 that will help guide future investment decisions. This plan shares the planned data representations; some metrics are based on actual data and some are based on proxy indicators. This plan also establishes a framework for these metrics and graphs, and as data accumulates they will become increasingly accurate. The plan also shares what the current investments will result in as well as the impacts of a greater level of investment.

2015-2016 Budget by Product Family and Other Costs

Total = $197 million[1]



[1] Total does not include reimbursable services budget or contingent budget authority.

PRODUCT FAMILY:

Roadway

What is it?

The roadway product family includes:

- Roadway surface – the drivable surface, which is primary made of asphalt, gravel, concrete, or brick.
- Roadway substructure – several differing layers of gravel, dirt, and other materials, to support the roadway surface. Many of the County's older roads were built upon wood and rock, rather than being engineered with modern materials.

Strategic Plan for Road Services priorities for the roadway network:

1. lifeline routes
2. arterial roads
3. sole-access local roads
4. other local access roads

Desired attributes

- Meets safety and environmental standards
- Free of hazards
- Accessible for emergency vehicles
- Usable during snow events
- Smooth ride
- No load limits or undue speed restrictions
- All lanes open
- Reliable travel time
- Free of litter/debris

By the numbers

- **Nearly 1500 miles** (more than the distance from Canada to Mexico). Roughly one-third are arterials.
- **Over 1 million trips per day** (on some high-volume roads, half of the trips originate in cities or other counties).
- **320 miles of arterials** require major reconstruction at a cost of ~ $2 billion

Purpose and relationship to network

The roadway enables movement of people and goods, serving residents, commerce, emergency services, and other users. Cars, trucks, buses and bicycles all use the roadway for their travel needs. Traffic volume and vehicle weight, especially heavy trucks and buses, plus water and weather all impact the rate of deterioration of the roadway asset.

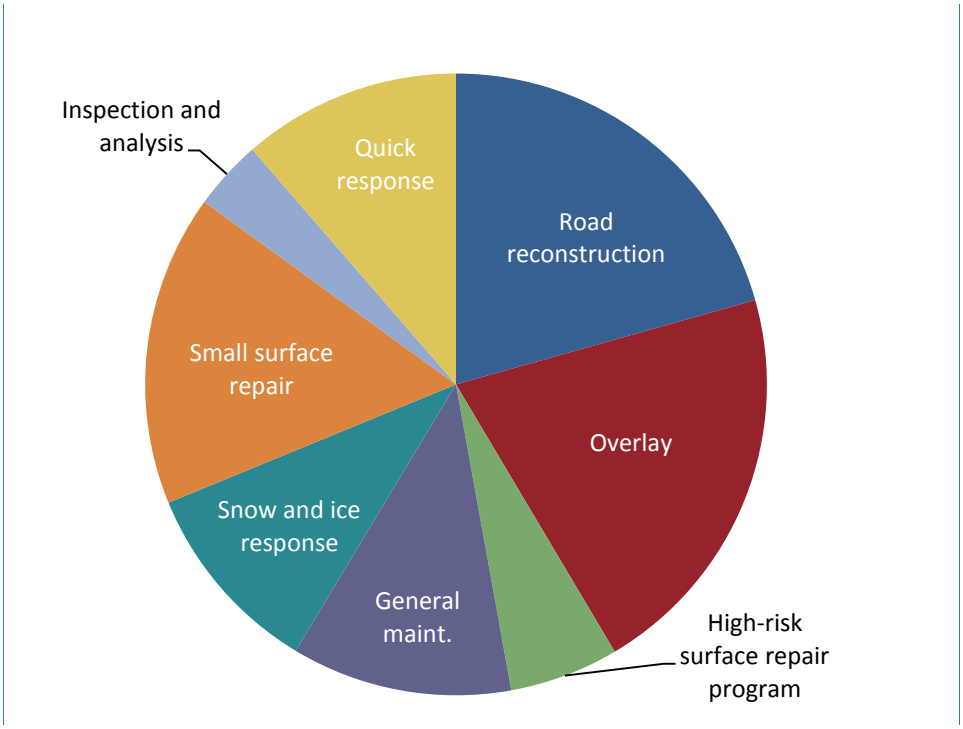
Road pavement protects the roadbed below from deterioration. Pavement must eventually be resurfaced due to wear and tear or the subsurface will deteriorate at an accelerated rate.

The roadbed or subsurface is critical to the structural integrity of the road. If the roadbed is deteriorated, no amount of repaving will keep the surface smooth. The area under and adjacent to the road may serve as a pathway for utilities, enabling an efficient and consolidated use of a pre-existing network that minimizes impacts on private property.

PRODUCT FAMILY: **Roadway**

Proposed 2015-2016 investment - $48 million

Operating and capital activities



Description

Small surface repairs: Activities such as pothole filling, square cut patching, and crack sealing. More of these activities will be performed as a means of addressing critical safety issues, particularly in light of inadequate investment in overlay and reconstruction.

High-risk surface repair program: Surface treatments, such as partial reconstruction or repaving on arterial segments at a high-risk of failure, are efforts to prolong the useful life of roadways and improve safety for the traveling public. Surface repairs are a short-term fix; eventually the roadways will need to receive either full pavement overlay or reconstruction.

Overlay: CIP funds (including $1.5 million in grant revenues) to repave approximately 15 miles. This is the only overlay funding included in the 6-Year CIP, as revenue to the CIP continues to decline.

Pavement preservation – road reconstruction: Reconstruct 0.7 miles of West Snoqualmie Valley Road NE and design the 2017 reconstruction of one mile of 148th Avenue SE. Reconstruction involves removing existing roadway and subgrade, replacing sub structure, improving drainage, and replacing the roadway with overlay and restriping. Both of these projects are funded almost entirely by grants.

General roadway maintenance: Routine, but important maintenance tasks such as sweeping, curb and gutter repair, and hazard removal. These tasks are done for safety and environmental compliance.

PRODUCT FAMILY: **Roadway**

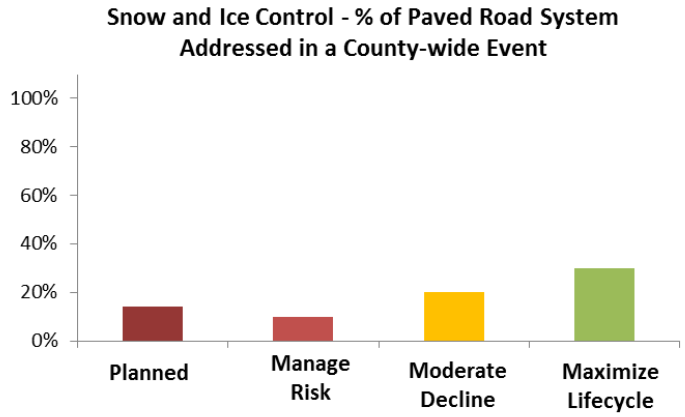
Snow and ice response: Staffing, equipment and materials required to deal with snow and ice events. The primary capacity constraint for snow and ice response during a countywide event is the number of licensed and trained truck/plow drivers. The county employs year-round licensed and trained teams who are experienced at operating snow and ice equipment, and who also provide support for maintaining and preserving roads and bridges throughout the rest of the year. There are ongoing efforts being made by the county to identify on-call drivers, however, because in this region severe winter weather is infrequent, there are a limited number of licensed, trained, and available operators for work that is highly episodic and short-term. Funding staffing levels sufficient to care for the year round maintenance needs of county roads and bridges is the best way to ensure staff is available to keep critical parts of the roadway network open during large county-wide snow and ice events.

Inspection and analysis: Activities to support pavement condition rating, analysis and reporting. The state County Road Administration Board requires that the county rate and report on pavement condition in order for to the county to receive state gas tax revenues. In addition, road conditions are reported in King County's Comprehensive Annual Financial Report (CAFR) as required under Government Accounting Standards Board (GASB) Statement 34.

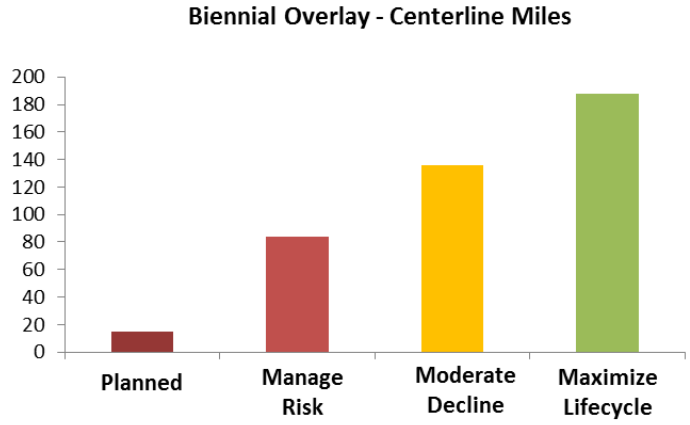
Quick response: Funds for unanticipated damage and emergency repairs related to storm events, landslides, or severe roadway condition deterioration.

PRODUCT FAMILY: **Roadway**

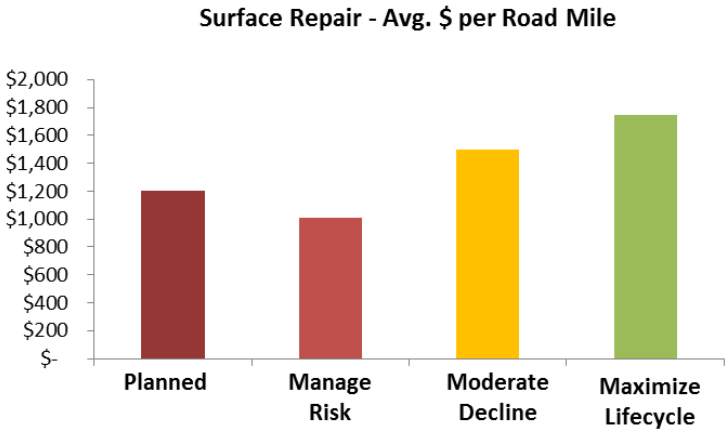
Selected 2015-2016 planned accomplishment levels



Given the current staffing levels, an estimated 14% of the system can be plowed in a county-wide storm event. In 2012, the County could treat 30% of the system – typical of what most transportation agencies strive to achieve to keep critical life safety and travel routes open.



Historically, 50+ miles were overlaid annually to preserve roads near the lowest lifecycle cost. Only 15+ miles will be overlaid in the biennium. After the biennium, overlay funding will need to be funded primarily by grant funds. The 2015-2016 overlay is partially supported by grant funds.



To preserve the roadway for as long as possible without adequate funding for overlay, an expanded surface treatment program (square cut and pothole patching, grinding, etc.) will be initiated. This program will also address critical safety issues related to pavement conditions by identifying and making repairs to roadway segments.

PRODUCT FAMILY: **Roadway**

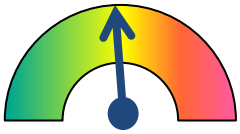
Customer experience – expected results of 2015-2016 investment

All lanes open:

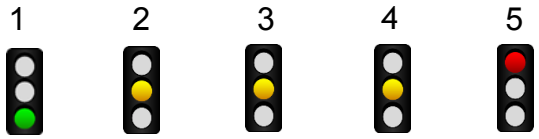
Road closure/restriction days and average daily trips impacted

- Significant impact
- Moderate impact
- Minor impact

Overall:



Tier:

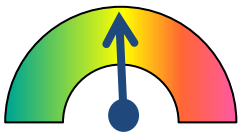


Smooth ride:

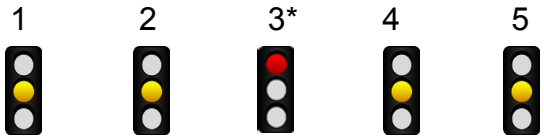
Percent of road miles with satisfactory pavement condition score

- 0 – 49% (poor)
- 50 – 79% (fair)
- 80 – 100% (satisfactory)

Overall:



Tier:



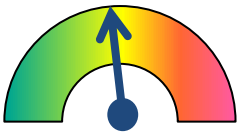
* Based on current condition scores, less than 50% of tier 3 roads are expected to have satisfactory condition scores at the end of the biennium.

Free of hazards:

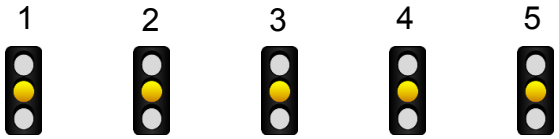
Average time (in hours) to respond to a hazard

- 25 – 50 hours
- 13 – 24 hours
- 0 – 12 hours

Overall:



Tier:

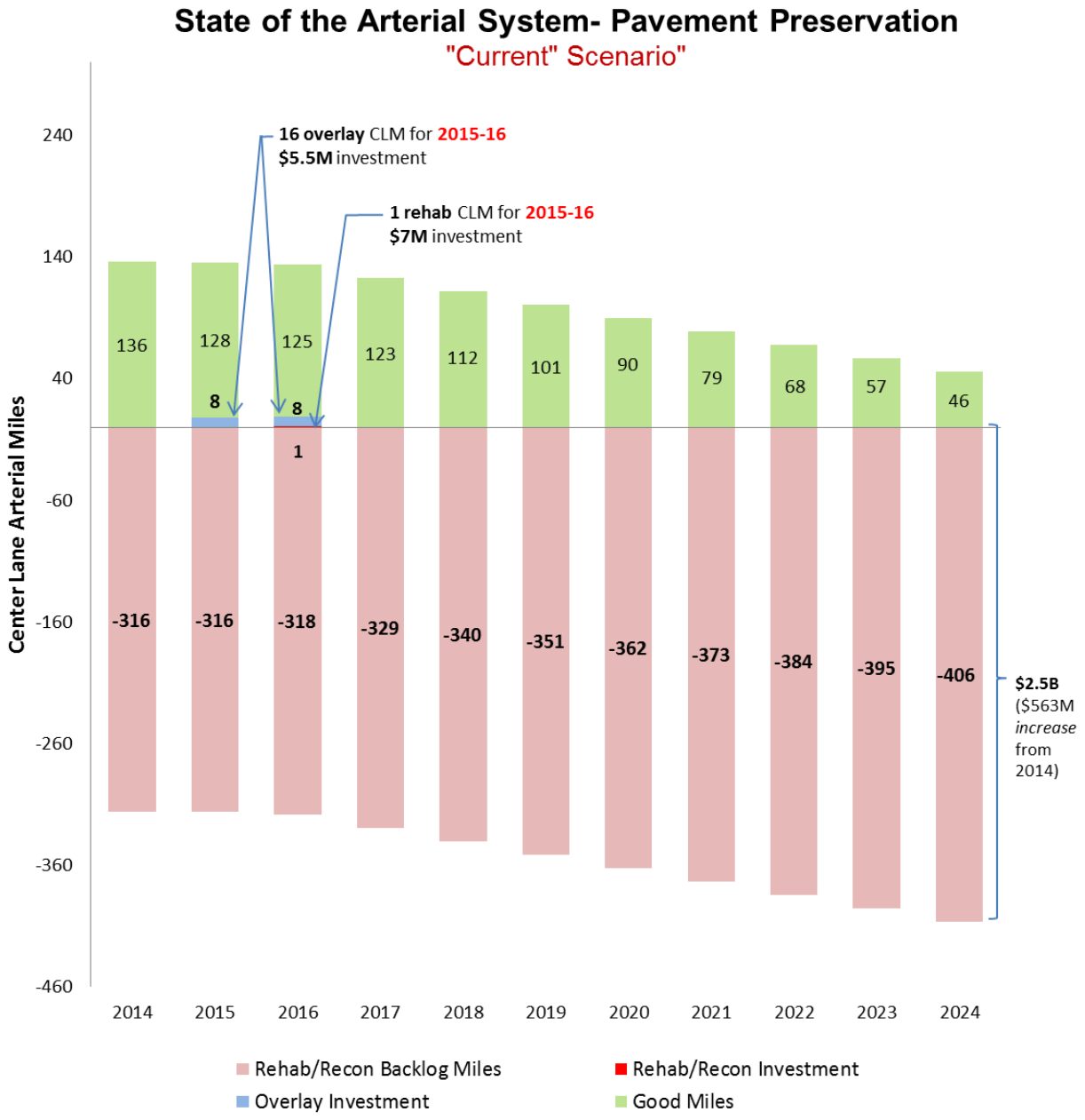


RODUCT FAMILY: **Roadway**

Backlog/forecasting analysis

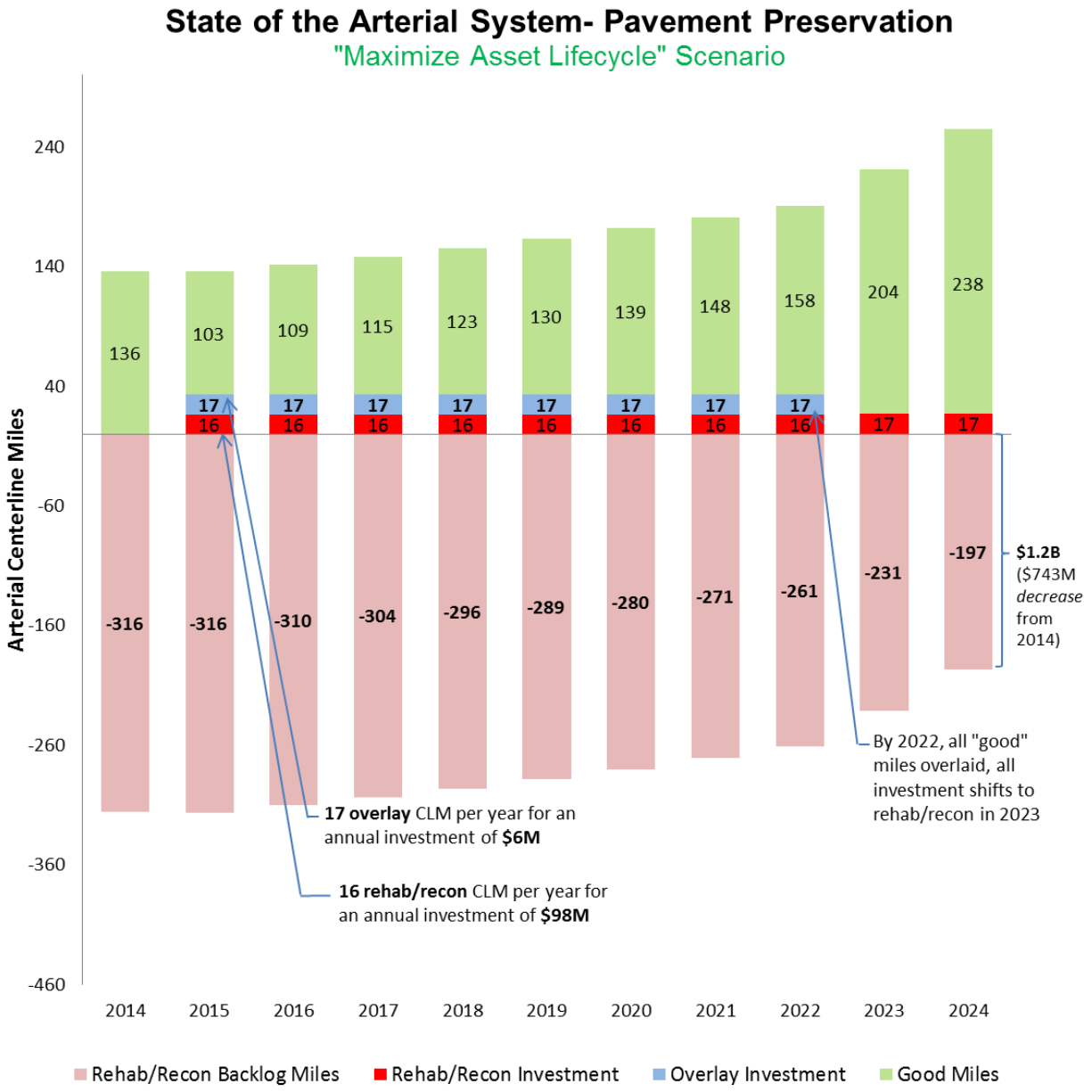
(See Appendix A for more details and additional scenarios)

The arterial road system is subject to considerable deterioration in the next ten years due recent and projected lack of resources to invest in maintenance or reconstruction. Portions of the system may be subject to speed limitations or partial closure in the future.



PRODUCT FAMILY: **Roadway**

If the county made an annual investment of **$104M**, the condition of the arterial road system would improve. In this scenario, starting in 2023, only investment in rehabilitation and reconstruction provides the lowest lifecycle cost for preserving the system. However, given significant investments in rehab/recon, the deterioration rate is slowing and a steady state is achieved around the year 2030. The steady state is the point at which the annual needs of the system to achieve the lowest lifecycle cost are equal to the annual investments in the system.



PRODUCT FAMILY:

Bridges and Structures

What is it?

The bridges and structures product family includes:

1. Bridges – can be made of concrete, steel, or timber and include long span bridges, short span bridges, safety enhancement bridges that help keep wildlife off roadways, and pedestrian bridges.
2. Structures – infrastructure designed to retain or contain the natural environment and protect the built environment. Examples include seawalls and retaining walls.

Desired attributes

- Meets safety and environmental standards
- Free of hazards
- Open
- No load/height restrictions
- Nonmotorized access
- Minimal crossing delays
- Free of litter, debris, graffiti, bird guano

By the numbers

- **183 bridges** owned and maintained by King County

Road Services also inspects an additional:

- **161 city-owned bridges**
- **10 King County Parks bridges**

Oldest King County bridge: Cedar River Trail, built in 1908

Newest King County bridge: South Park Bridge, opened June 2014

Purpose and relationship to network

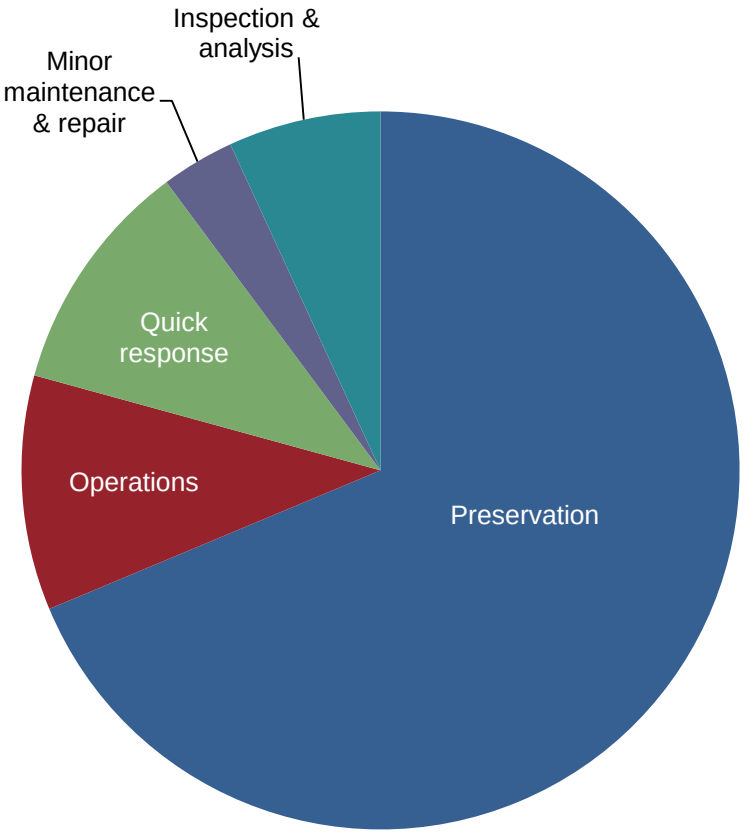
Bridges are key components of the county road network that provide routes over bodies of water, roads, lowlands, railroad tracks or other obstacles. Bridges are inspected regularly and if found to be unsafe must be fixed or closed. Closures can result in loss of access to property or longer travel times due to detours.

Structures enable roads to exist in diverse landscapes by controlling and shaping the natural environment and providing protection from environmental impacts such as flooding, tides, waves, storm surges or landslides.

PRODUCT FAMILY: **Bridges/Structures**

Proposed 2015-2016 investment - $15 million

Operating and capital activities



Description

Preservation: Bridge needs identified through the inspection process. The needs can range from minor repairs to full replacements.

Operations: Operating costs for the South Park Bridge, which requires bridge tender staff to raise and lower the bridge for boat traffic.

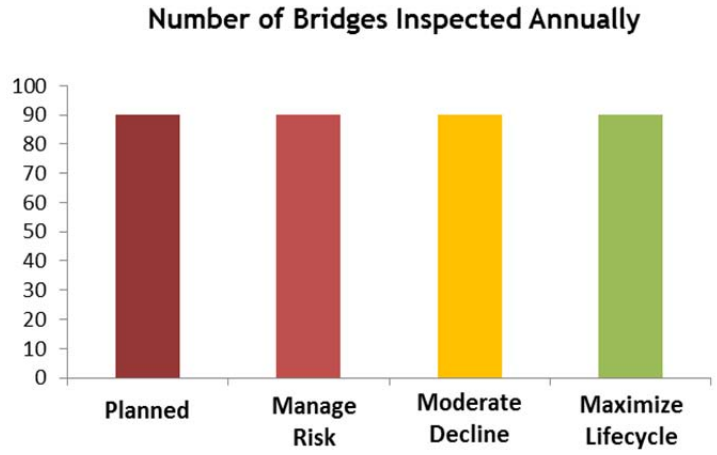
Quick response: Funds to address unexpected failures associated with the bridge system.

Minor maintenance and repair: Tasks associated with routine bridge maintenance and repair, including small repairs, debris removal, surface cleaning, and graffiti removal.

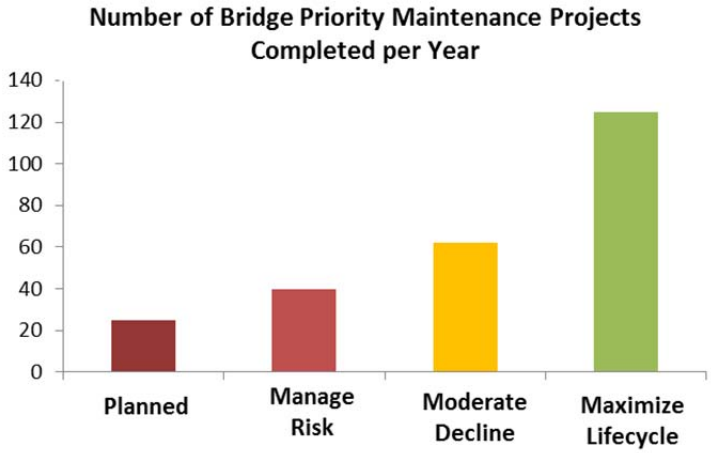
Inspection and analysis: Tasks associated with performing bridge inspections, load ratings and other analyses.

PRODUCT FAMILY: Bridges/Structures

Selected 2015-2016 planned accomplishment levels



There are 183 bridges in the King County inventory. The federal government requires that all bridges be inspected every other year, more often if the bridge condition warrants or if emergency events such as flooding or earthquakes occur. The division will be meeting those requirements in 2015-2016.



Bridge inspections result in a prioritized list of maintenance and preservation needs. Because of budget constraints, many issues that do not pose immediate safety risks will not be addressed in the biennium.

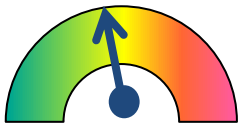
PRODUCT FAMILY: **Bridges/Structures**

Customer experience – expected results of 2015-2016 investment

Bridges open: **Number of bridges closed indefinitely or permanently**

- Closures increase
- Closures stay at 2014 level (2)
- No closures

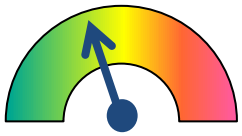
Overall: **Tier analysis TBD**



No load restrictions: **Number of bridges with load restrictions**

- Restrictions increase
- Restrictions remain at 2014 levels (3)
- Restrictions decrease

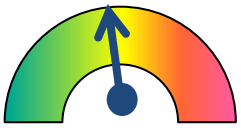
Overall: **Tier analysis TBD**



Bridges condition: **Number of bridges structurally deficient ***

- Number increases
- Remains at 2014 levels (15)
- Number decreases

Overall: **Tier analysis TBD**



*These deficiencies are usually not apparent to the bridge user, but are important measures that indicate bridge stock in need of repair or replacement.

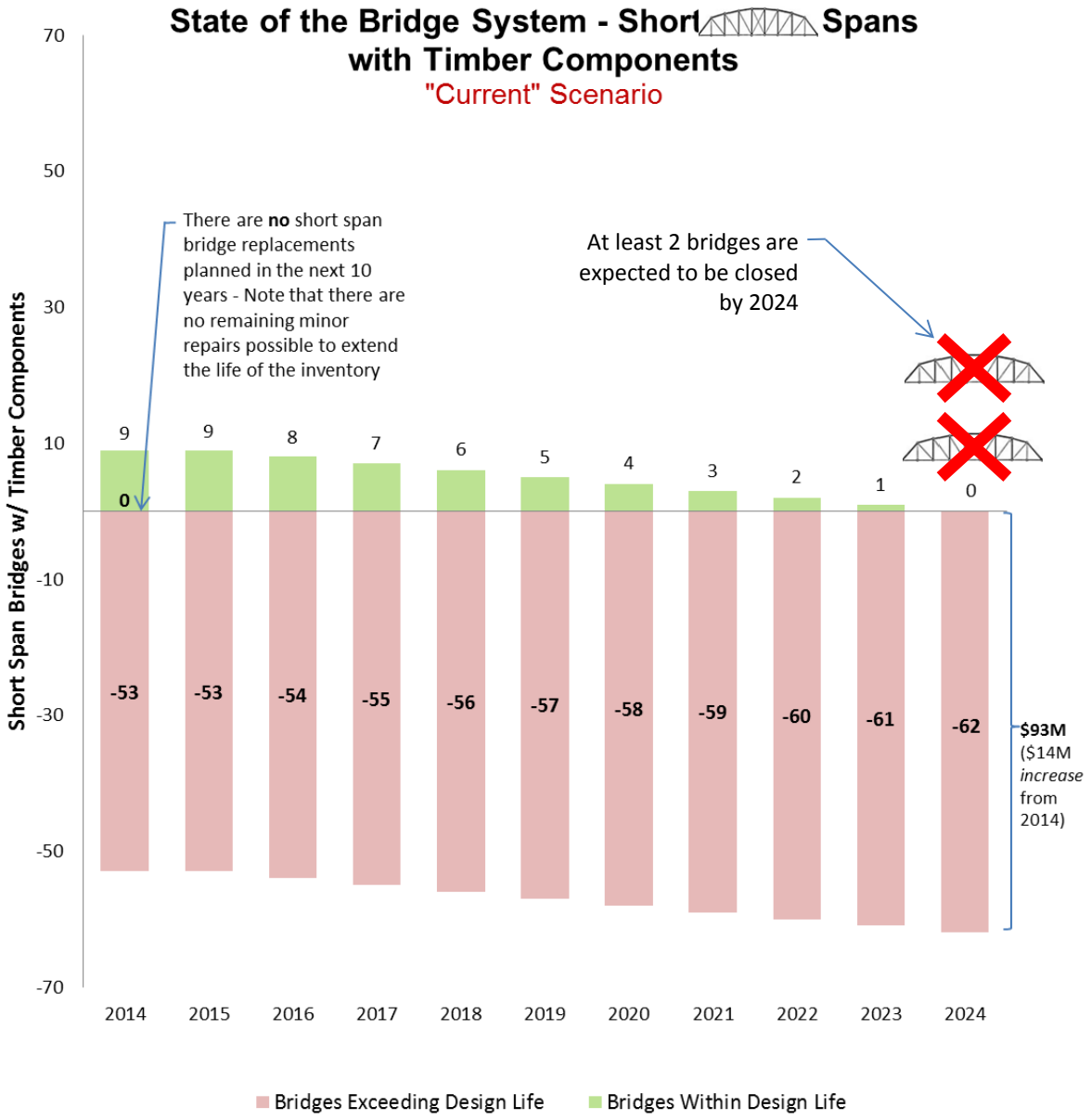
Analysis of the customer experience related to bridge product family will continue to be refined.

PRODUCT FAMILY: **Bridges/Structures**

Backlog/forecasting analysis

(See Appendix A for more details)

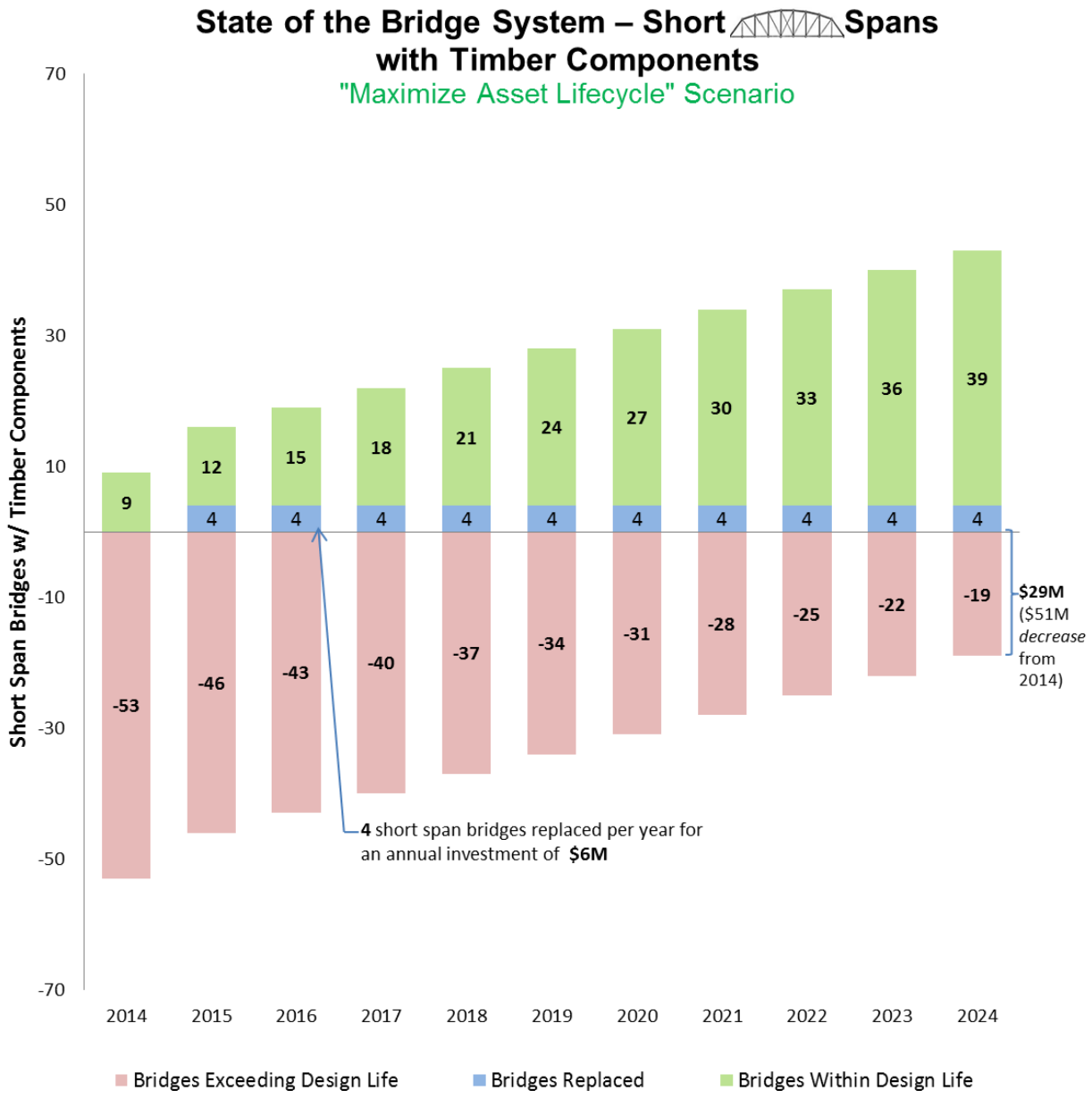
There is no planned investment in short span bridges with timber components in the next 10 years. This subset of the bridge inventory can no longer be maintained to extend their useful life, and therefore must be replaced to maintain functionality. Unlike long span bridges, short spans are not eligible for federal funds – historically the source of more than 80% of bridge replacement funding. At least one or more of these bridges is expected to require closure by 2024.



PRODUCT FAMILY: **Bridges/Structures**

If the county made an annual investment of **$6M**, four short span bridges with timber components would be replaced each year. The backlog of bridge replacements would decrease significantly through 2024, and exceeds a steady state. The steady state is the point at which the annual needs of the system to achieve the lowest lifecycle cost are equal to the annual investments in the system.

(See Appendix A for more details and additional scenarios)



PRODUCT FAMILY:

Drainage

What is it?

The drainage product family includes:

1. Conveyance systems that move water from one location to another. These include pipe networks, culverts, ditches, and catch basins.
2. Detention and treatment systems –such as stormwater ponds, rain gardens, vaults, and swales.

Desired attributes

- Meets safety and environmental standards
- Water on roadway causes minimal impact to travelers
- No water damage to infrastructure or private property
- Good water quality
- Ponds, ditches and enclosed drainage system free of litter/debris
- No mosquitos in road-related ponds or ditches

By the numbers

- **20,949 catch basins**
- **33,527 cross culverts**
- **2.9 million estimated feet of pipe** in the system (more than two and one half times the distance between Earth and the International Space Station).

Purpose and relationship to network

Drainage infrastructure moves stormwater away from the roadway. Stormwater may originate from the road surface or from neighboring properties. Standing water can be a safety hazard to road users and accelerates the deterioration of the roadway surface and substructure.

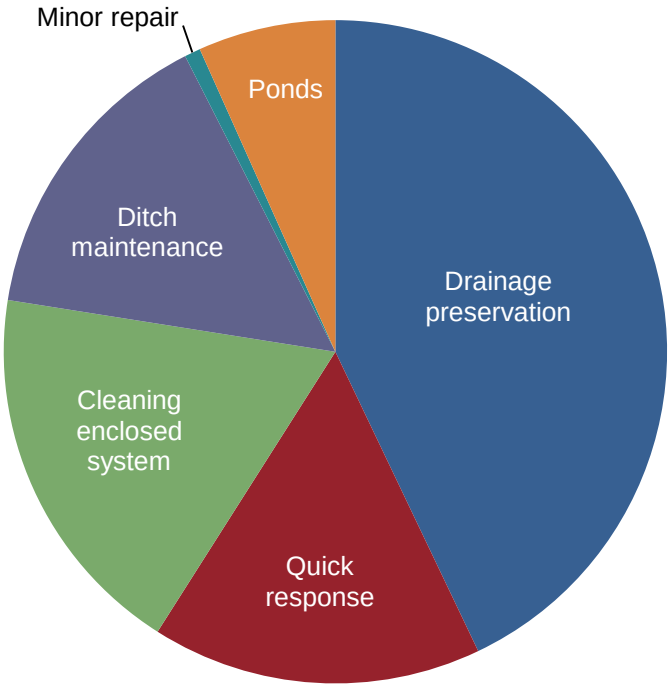
Drainage infrastructure also reduces flood risk to the built environment (private and public property) by collecting and redirecting stormwater to natural bodies of water and designated collection points.

In addition, drainage infrastructure reduces water pollution by collecting stormwater and filtering out pollutants and sediment via settlement, infiltration, or other processes.

PRODUCT FAMILY: **Drainage**

Proposed 2015-2016 investment - $34 million

Operating and capital activities



Description

Drainage preservation (CIP): Major and minor drainage infrastructure repairs and replacement. Projects range from replacements of small segments of pipe, to large cross-culvert replacements with fish passable concrete box culverts that provide similar functions as bridges.

Quick response: Funds to address unanticipated failures of the drainage system.

Cleaning enclosed system: Routine maintenance including pipe and catch basin cleaning, vactoring sediment, and small incidental repairs.

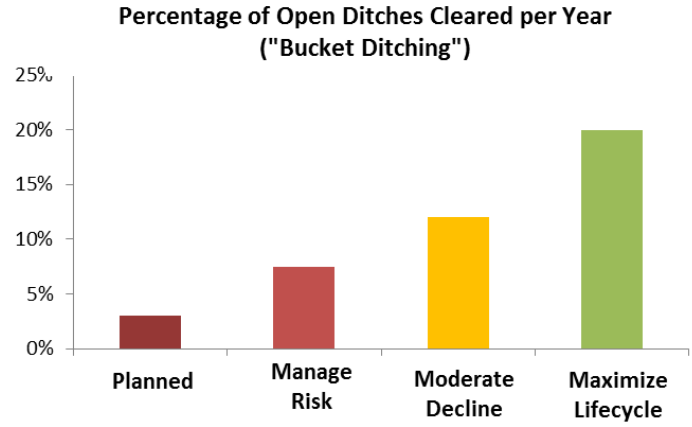
Ditch maintenance: Routine maintenance to remove sediment and debris, primarily performed through bucket ditching with a front end loader or a back hoe.

Minor repair: Minor repairs and tasks including pipe marking, repairing trash racks, preventing erosion, replacing rip rap, replacing catch basin lids.

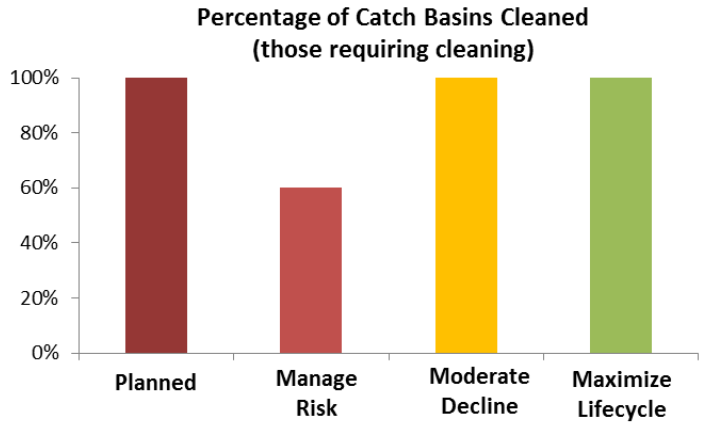
Ponds: Mowing, brush removal and cleaning of stormwater ponds.

PRODUCT FAMILY: **Drainage**

Selected 2015-2016 planned accomplishment levels



Bucket ditching with heavy equipment is performed to keep drainage ditches free of vegetation, sediment and debris. Current guidelines require “skip-ditching,” a practice of leaving some vegetation in place to protect habitat areas which has an impact on the accomplishment rate.



Catch basins are required to be inspected and cleaned in accordance with the County’s National Pollution Discharge Elimination System permit. The percentage of catch basins required to be addressed will increase in 2015-16. The King County Water and Land Resources Division has contributed funds to assist in inspection for permit compliance.

PRODUCT FAMILY: **Drainage**

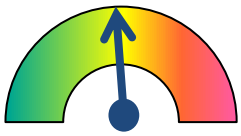
Customer experience – expected results of 2015-2016 investment

Minimal standing water on roadway

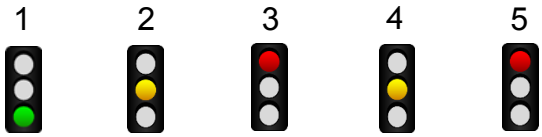
Number of road closures and length of time closed due to water on roadway

- Significant impact
- Moderate impact
- Minor impact

Overall:



Tier:



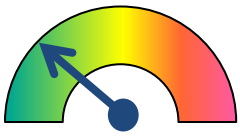
* Tier 4 roads are sole access, therefore standing water issues that impede or restrict travel will be addressed prior to similar issues on Tier 5 road.

Good water quality:

Percent of required water quality monitoring results meeting standards

- 70-79%
- 80-89%
- 90-100%

Overall:



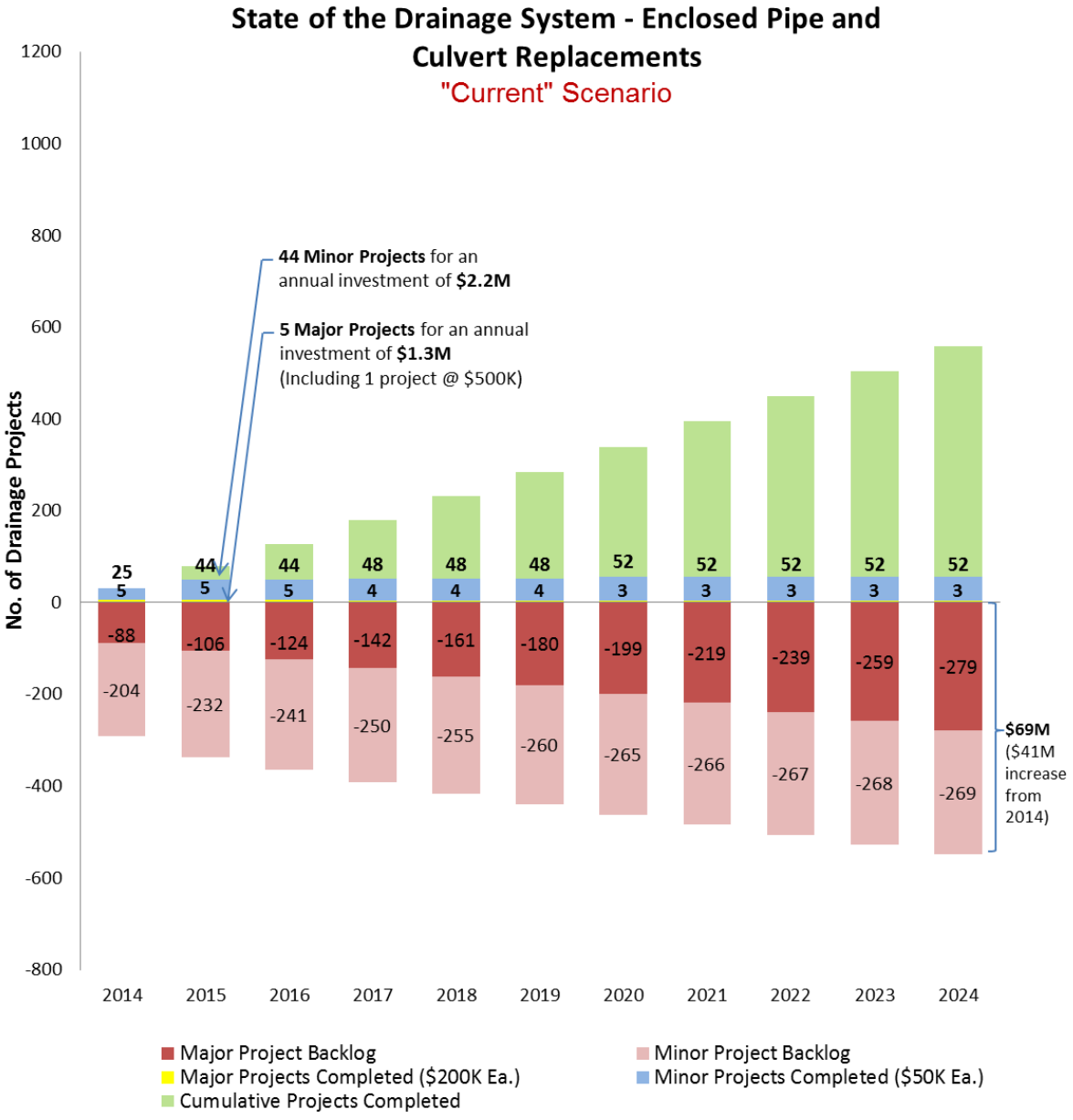
Tier:

PRODUCT FAMILY: **Drainage**

Backlog/forecasting analysis

(See Appendix A for more details and additional scenarios)

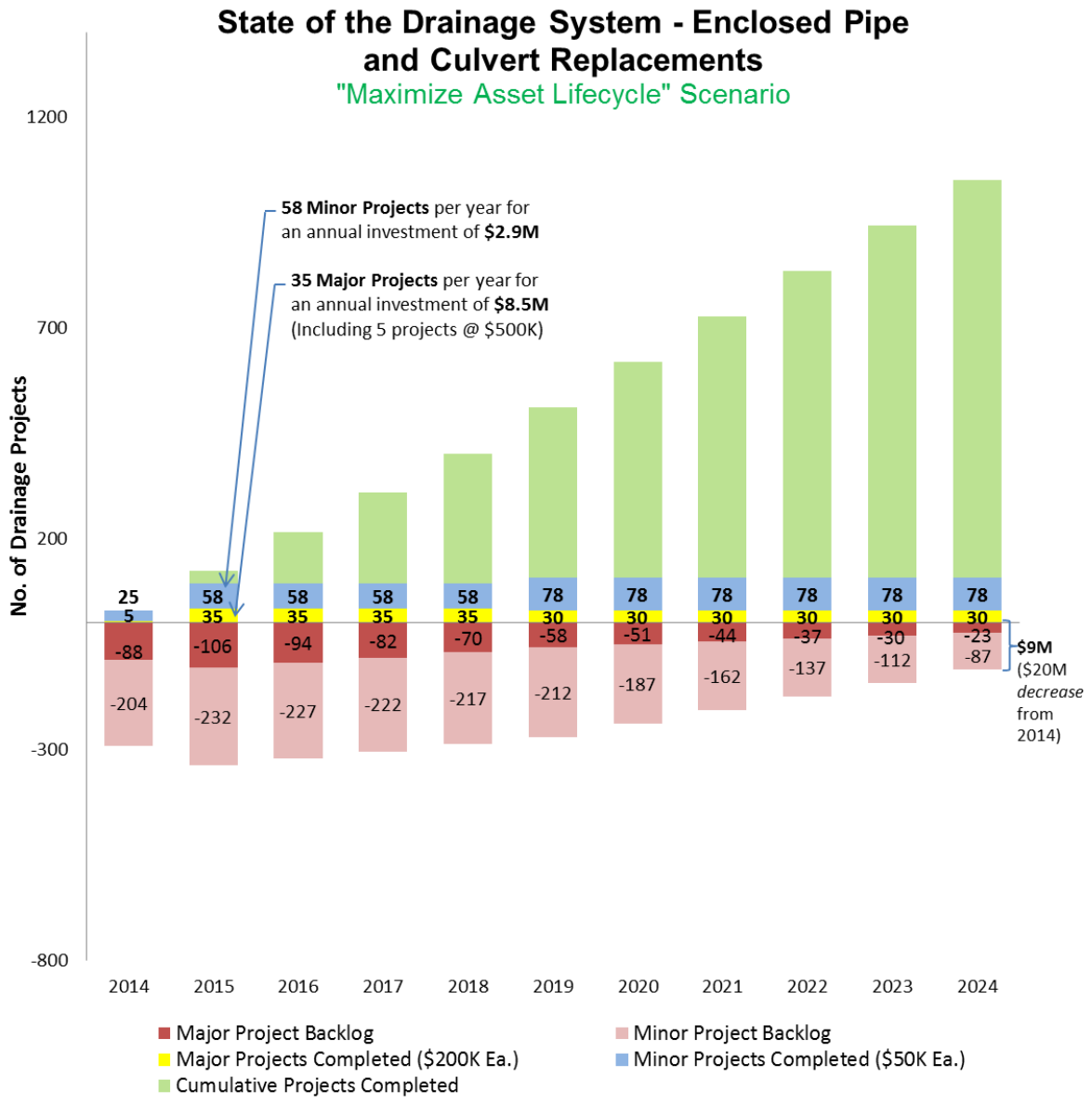
The forecasting for drainage is measured not by a quantity of assets, but by number of projects. This is because the complete inventory and conditions are not known at the current time; projects are identified when problems occur such as flooding or sink holes. There is a defined list of current projects identified, and the project list grows each year as system failures arise and are documented. With an annual investment of **$3.5M**, the backlog of enclosed drainage projects is growing significantly.



PRODUCT FAMILY: **Drainage**

If the county made an annual investment of **$11.4M** the backlog of enclosed drainage projects decreases and almost approaches a steady state by 2024. The steady state is the point at which the annual needs of the system to achieve the lowest lifecycle cost are equal to the annual investments in the system.

(See Appendix A for more details and additional scenarios)



PRODUCT FAMILY:

Traffic Control Devices

What is it?

The traffic control devices product family is a collection of devices and information systems used to regulate, warn, or guide traffic (vehicle and pedestrian). It is placed on, over, or adjacent to a roadway, pedestrian path, or shared-use path.

- Signs (regulatory, warning, informational), pavement markings, street lighting, and signals (flashers, traffic signals, controllers).
- Intelligent transportation system (ITS) equipment – cameras, electronic signs, license plate readers, traffic count stations, and other information gathering and communication devices.

Desired attributes

- Meets safety standards
- Restrictions clearly marked
- Damaged signs replaced
- Traffic signs, stripes and markings visible night and day
- Intersections operating efficiently (for safety and optimal traffic flow)
- Traffic control systems operating correctly
- Information is accurate, clear, appropriate
- Free of graffiti

By the numbers

Inventory =

- 80 traffic signals
- Over 44,000 traffic signs

Subscribers to “Road Alert” online traffic notifications: 4,550

Purpose and relationship to network

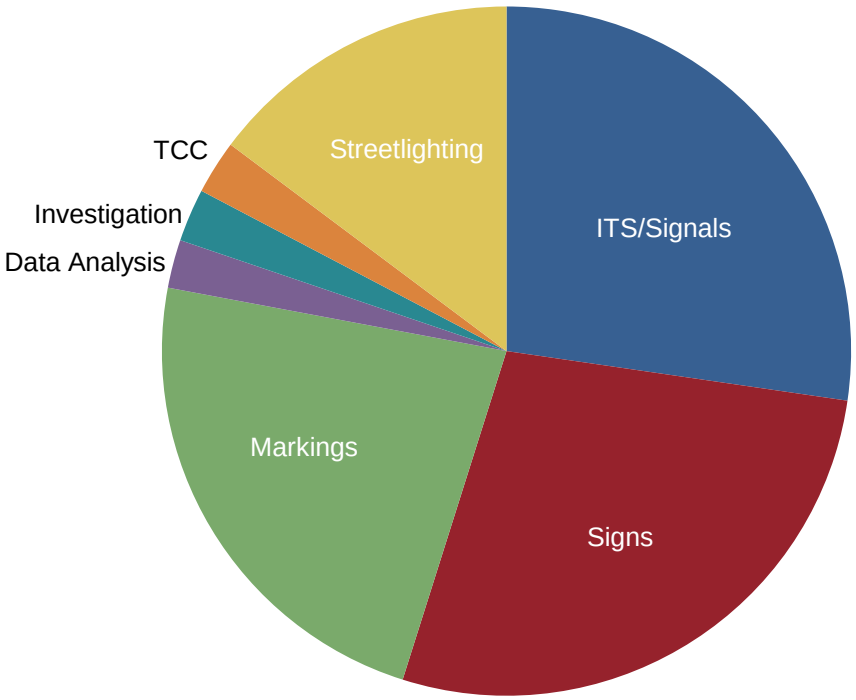
Traffic control devices promote safety and efficiency, and can enhance transit speed and reliability by enabling the orderly movement of all road users on streets and highways.

ITS equipment provides real-time traffic information to traffic operators, the media, and the traveling public. The information network is designed to increase the safety and efficiency of roadways and to inform drivers of adverse conditions such as accidents or congestion.

PRODUCT FAMILY: **Traffic Control Devices**

Proposed 2015-2016 investment - $22 million

Operating and capital activities



Description

Signals and intelligent transportation systems: Operating, maintaining, repairing and replacing traffic signals and all associated components such as controllers, lights, mast arms, timers, cameras, cabinets, and loop detectors.

Signs: Maintaining and replacing signs, including fabrication, installation, inspection, cleaning and responding to citizen call-outs.

Markings: Maintaining and replacing pavement markings, including regular and thermoplastic striping and buttons.

Data analysis: Engineering tasks associated with traffic control operations, including signal studies and design, collision mapping and reporting, and level of service analysis.

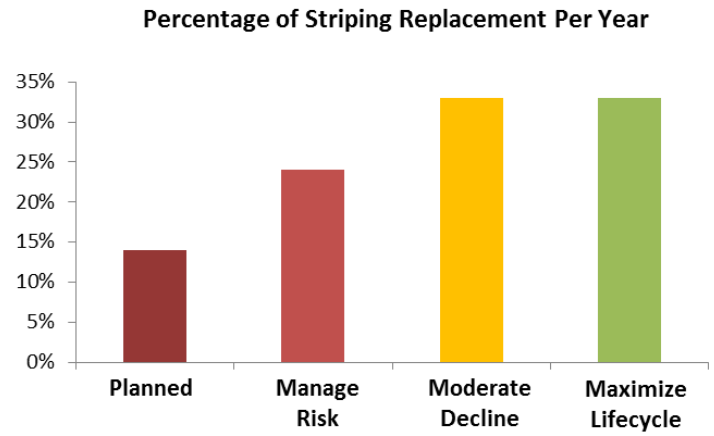
Safety investigations: Engineering tasks associated with traffic control investigations, including school safety, collisions, and citizen inquiries.

Traffic Control Center: Various components of traffic management systems (signals, control boxes, real time video) are monitored and adjusted in the center. Real-time traffic cameras and electronic messaging signs are also controlled and information is shared with the public.

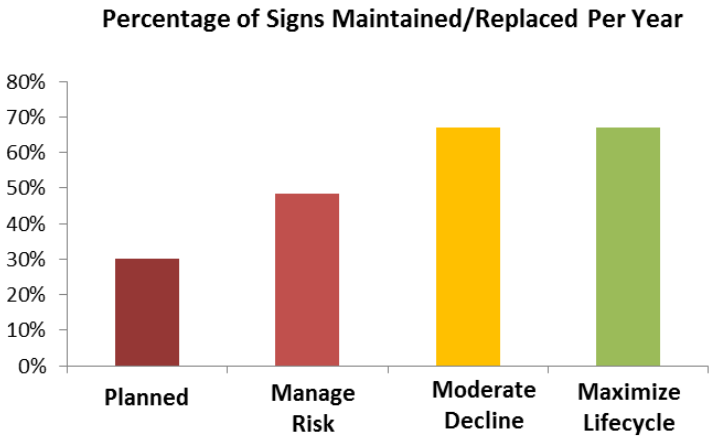
Street lighting: Operating costs for street lighting associated with safety and visibility. Includes loan-funded project for roadway light LED conversion for energy savings purposes.

PRODUCT FAMILY: Traffic Control Devices

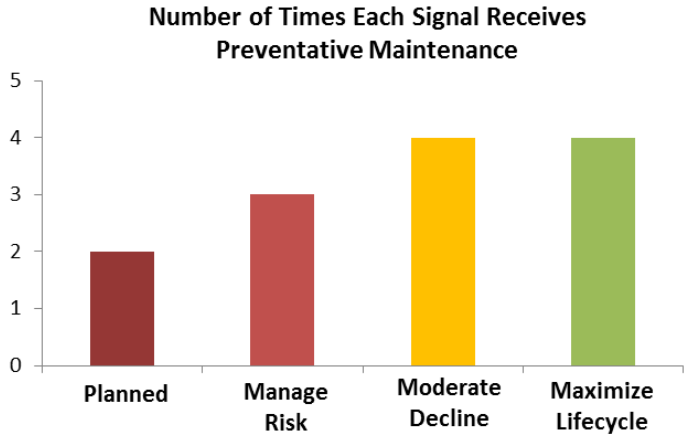
Selected 2015-2016 planned accomplishment levels



Thermoplastic materials are used for cross walks, stop bars, arrows, etc. They typically last three years before requiring replacement.



In addition to responding to "call-outs" from residents regarding sign-related issues, signs also need regular cleaning and replacement. All signs should be cleaned at least once per year, and replaced every 10 years as reflectivity is reduced.



Signals are made up of hundreds of electrical components that require regular maintenance, replacements and upgrades to ensure functionality. Each signal should be inspected and routinely upgraded four times per year to ensure proper performance.

PRODUCT FAMILY: **Traffic Control Devices**

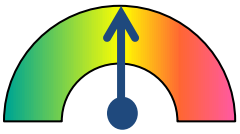
Customer experience – expected results of 2015-2016 investment

Damaged signs replaced:

- 13 – 24 hours
- 7 – 12 hours
- 0 – 6 hours

Sign replacement/repair response time in hours

Overall:



Tier:

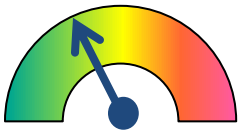
1 2 3 4 5

Signals operating properly:

- 12 or more
- 7 – 12
- 0 - 6

Number of signal failures per year

Overall:



Tier:

1 2 3 4 5

There are no signals on tier 4 and 5 roads.

PRODUCT FAMILY:

Roadside

What is it?

The roadside product family includes the various road system features and components that are within the road right-of-way but outside the travel lanes of the road. This includes sidewalks, pathways, shoulders, planters and landscape walls, roadside slopes, and ADA ramps. (Note: Drainage facilities may be located in the roadside area, but are treated as a separate product family.)

Desired attributes

- Meets safety and environmental standards
- Free of hazards/obstructions
- Good sight distance
- Guardrail where appropriate
- Vegetation does not interfere with road use
- Clear, unobstructed area for nonmotorized use and for vehicles that leave roadway
- Mitigation of slide and washout risk

By the numbers

- **827 miles of gravel shoulders**
- **73,000 feet of sidewalk**
- **429 danger trees** removed annually (10 year average)
- **2700 cubic yards of slide debris** removed from roadway annually (10year average)

Knotweed, a noxious weed, can grow almost an inch a day!

Purpose and relationship to network

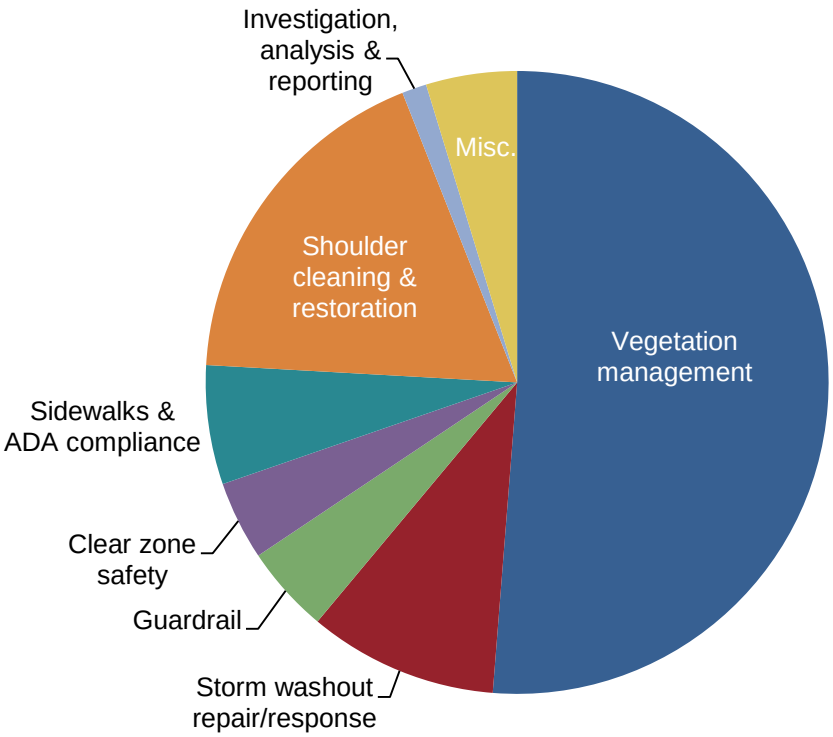
Because the roadside product family contains a variety of elements, the purposes vary.

- Sidewalks, pathways and ADA ramps enhance pedestrian safety and mobility.
- Shoulders can provide space for slow-moving vehicles, disabled vehicles, nonmotorized travel, and construction and maintenance activities.
- Guardrail mitigates the impacts of run off the road collisions and helps to prevent vehicles from colliding with dangerous obstacles or vulnerable areas.
- The roadway and areas outside of travel lanes (medians, shoulders, etc.) may also contain above or below ground utilities that belong to other public or private entities.

PRODUCT FAMILY: **Roadside**

Proposed 2015-2016 investment - $25.5 million

Operating and capital activities



Definitions

Vegetation management: Mowing and maintaining trees, brush and natural areas on the roadside, which provides clear sightlines for drivers, ensures water flow, and keeps traffic control signs, wayfinding signs, and traffic signals from being obscured. Overgrown vegetation on sidewalks, shoulders, and other walkways can lead to pedestrians walking in the roadway, and dangerous or downed trees can block roadways.

Storm washout: Response to slide events, including bank stabilization, material removal and disposal, repairs, etc.

Guardrail: Repairs to existing guardrail systems.

Clear zone safety: Addresses federal mandates for removing, retrofitting or re-engineering objects in the roadside clear zone—the area within ten feet of the travel lanes.

Americans with Disabilities Act (ADA) compliance/sidewalk construction and maintenance: Maintaining existing sidewalks and pedestrian pathways, including federal mandates for upgrading existing ADA curb ramps to current standards. Also included are funds to address specific ADA concerns raised by citizens. One grant funded sidewalk project on Roxbury Avenue is also included.

PRODUCT FAMILY: **Roadside**

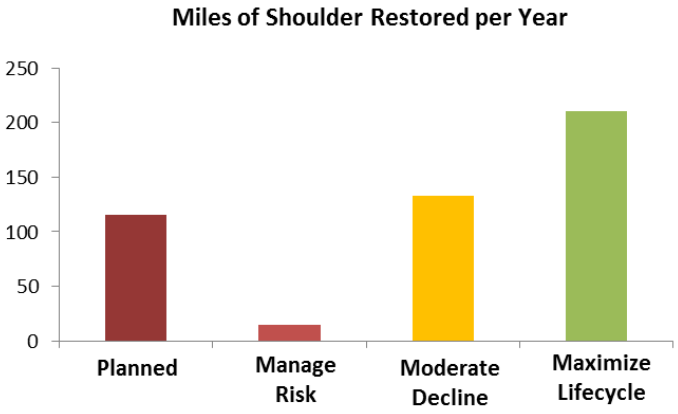
Shoulder cleaning and restoration: Maintaining gravel shoulders, including gravel patching and grading, and removing vegetation. Maintaining shoulders prevents standing water and reduces deterioration of the roadway.

Investigation analysis and reporting: Engineering, monitoring, and reporting tasks associated with safety investigations and response to citizen requests.

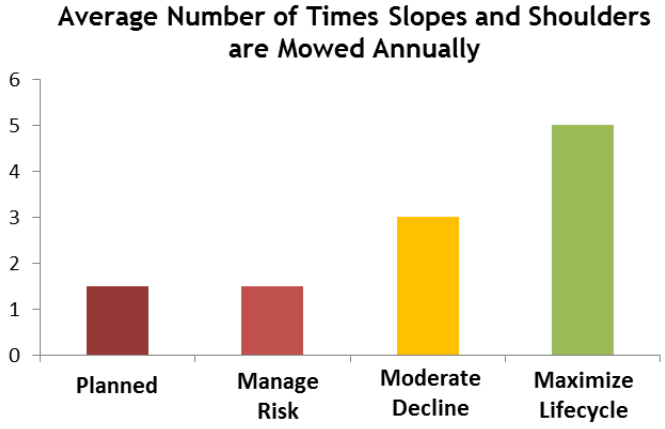
Miscellaneous: Minor maintenance of roadside features, including fence repair, hazardous material removal, repair of rock walls, and roadside debris/litter removal.

PRODUCT FAMILY: **Roadside**

Selected 2015-2016 planned accomplishment levels



Shoulder restoration repairs degraded and rutted shoulders. Properly maintained shoulders facilitate good drainage and prevent standing water from impacting the roadway. They also provide a safe recovery area for vehicles that leave the traveled roadway. Funding is increased for this task to reduce roadway damage.



Slope and shoulder mowing serves a critical safety function by removing vegetation from lines of sight, from blocking visibility of traffic control devices, and obstructing pedestrian walkways. All slopes and shoulders should be mowed 5 times per year. Current funding for this task only provides for mowing slopes and shoulders 1.5 times on average per year. Critical slopes and shoulders may be mowed more than 1.5 times per year, while lower risk areas may not be mowed at all.

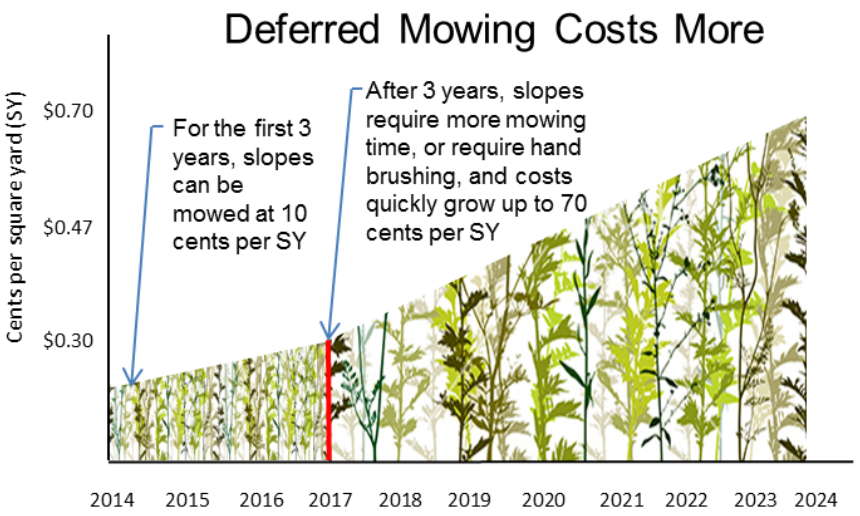
PRODUCT FAMILY: **Roadside**

Customer experience – expected results of 2015-2016 investment

(To be developed in 2015-16 and informed by the asset management system)

PRODUCT FAMILY: **Roadside**

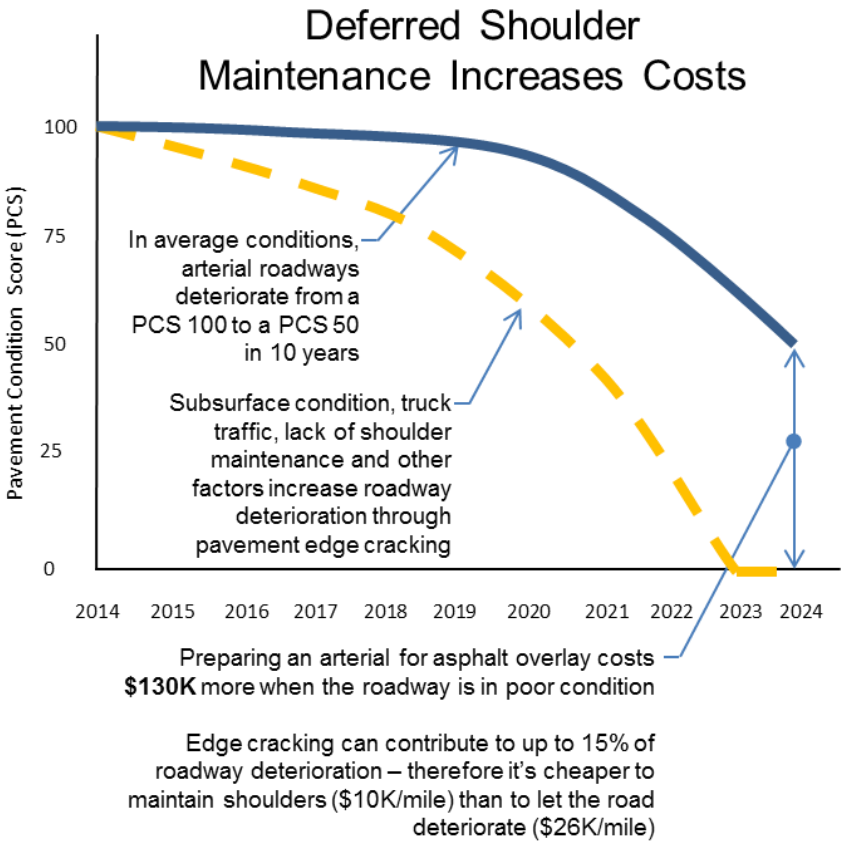
Backlog/forecasting analysis



Deferred mowing can cost up to an additional

$9,000

per mile per year after 10 years



Deferred shoulder maintenance can cost up to an additional

$16,000

per mile per year after 10 years